SEICOS MII, LII

MAINTENANCE MANUAL

SEIKI U.S.A.

JUNE '87

PC Parameters 13-12
Communic" 12-13

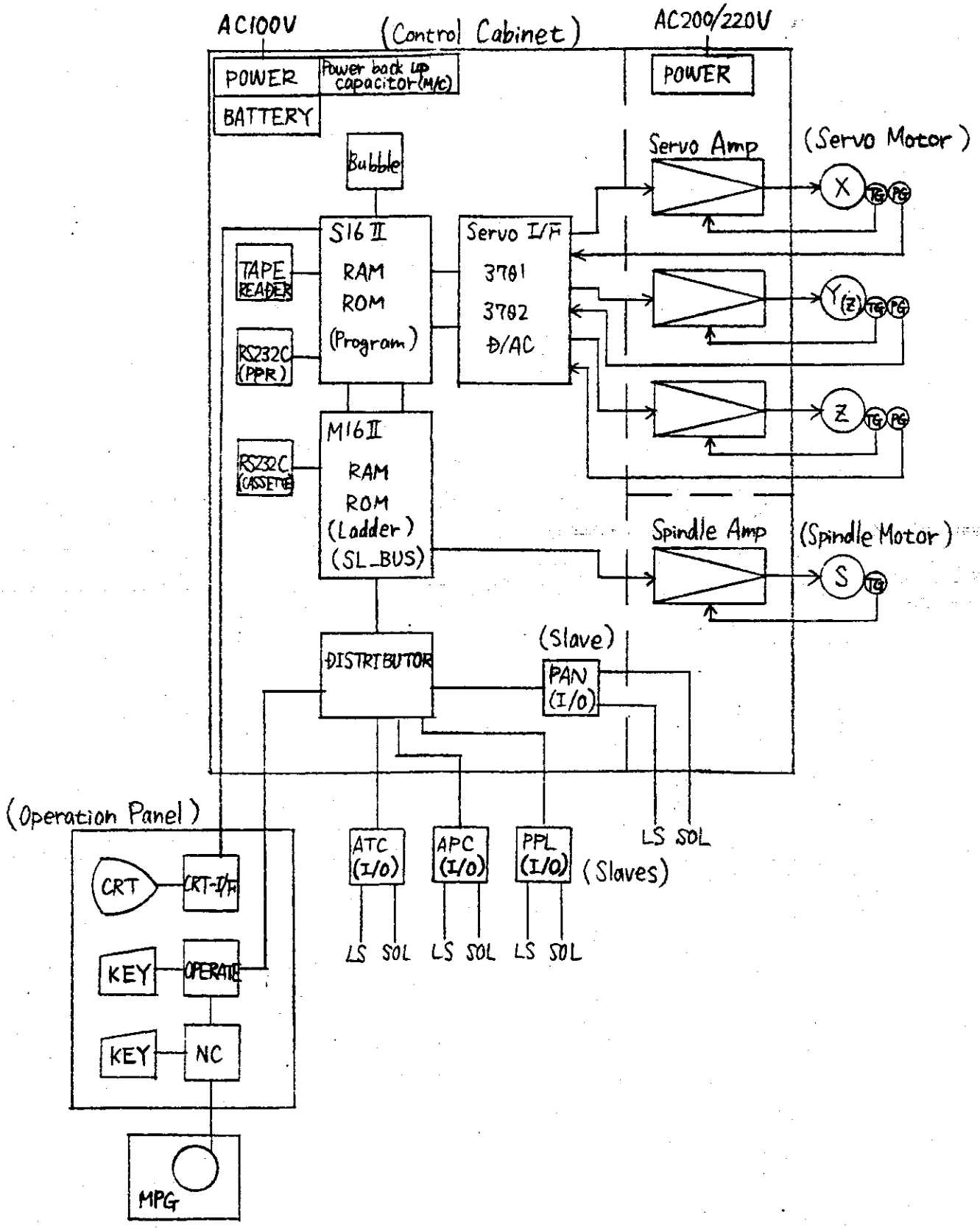
SEICOS MII/LII Maintenance Manual

Contents

(1) System construction and parts list

(1-1) System construction

This is for M/C. In case of Lathe, 2 axes.



(1-2) Parts list

Item	Part Name	Type	Note
1	S16II P.C.B.	01-04-02	ROM(M01XX.L01XX)
2	〃	01-04-03	ROM(M02XX.L02XX), RAM(256k)
3	ServoI/F P.C.B. (3)	01-05-02	3 axes
4	〃 (2)	〃	2 axes
5	〃 (Add)	〃	Additional axis
6	〃	01-05-03	Flexible resistance
7	Bubble memory P.C.B. (320m)	FBC501M4P	1260 inch
8	〃 (640m)	FBC502M4P	2520 inch
9	〃 (1280m)	FBC504M4P	5040 inch
10	Tape Reader	2401C-1	Parallel I/F
11	12' CRT	NM-1231A-01	
12	CRT I/F P.C.B.		for 12' CRT
13	Servo power unit	BP060RXB (SANYO)	Dynamic brake registance
14	Servo amplifier	27BA030FXTH1 (〃)	VM(X.Y)
15	〃	〃 H3 (〃)	VM(A).VK(A).NP(X.Z).HT(X.Z)
16	〃	〃 H4 (〃)	HF(X)
17	〃	〃 H5 (〃)	HF(Y.Z)
18	〃	27BA050FXTH1 (〃)	VK(X.Y)
19	〃	〃 H2 (〃)	VM(Z).VK(Z)
20	Servo motor	20BM040MXP41 (〃)	HF(X) 1500rpm
21	〃	040BXP42 (〃)	VM(A) 2000 〃
22	〃	060MXP41 (〃)	HF(Y.Z) 1500 〃
23	〃	060MXP42 (〃)	NP(X.Y) 1500 〃
24	〃	060BXP41 (〃)	VK(A).HT(X.Z) 2000 〃
25	〃	090MXP41 (〃)	VM(Y) 1500 〃

Item	Part Name	Type	Note
26	Servo motor	20BM090MXP42 (SANYO)	VM(X) 1500rpm
27	〃	20BM120MXP41 (〃)	VK45 (X.Y) 〃
28	〃	20BM220MXP41 (〃)	VK55 (X.Y) 〃
29	〃	20BM220MBP41 (〃)	VM(Z). VK(Z) with brake
30	M16Ⅱ P.C.B.	00-10-14	
31	SMCN-2B	07-02-03	SL-BUS control
32	OPIO-MC	10-02-01	Slave Operation key (M/C)
33	OPSW-MC	10-01-02	〃 〃 〃
34	OPIO-L		〃 〃 (Lathe)
35	OPSW-L		〃 〃 〃
36	SⅡKBS	01-08-02	〃 NC key OB NG A,C OK
37	PAN-I/O	10-05-02	〃 Panel I/O
38	INO-4B		〃 ATC (VM)
39	INO-10		〃
40	INO-11		〃
41	INO-12		〃
42	INO-13		〃
43	INO-14		〃
44	INO-15		〃
45	INO-16		〃
46	SLDS-3	09-03-01	〃 distributor CN1-CN7
47	Chime	PT CHIME	
48	Power supply	KS170-02	5V. ±15V. 24V
49	〃	PS10-05F	-5V (Input)
50	〃	PS50-7R5F	7.5V (SL-BUS)

Item	Part Name	Type	Note
51	Power Back Up Capacitor		Time delay for power off (M/C)
52	Battery	BR-C3V	3V, 5years life

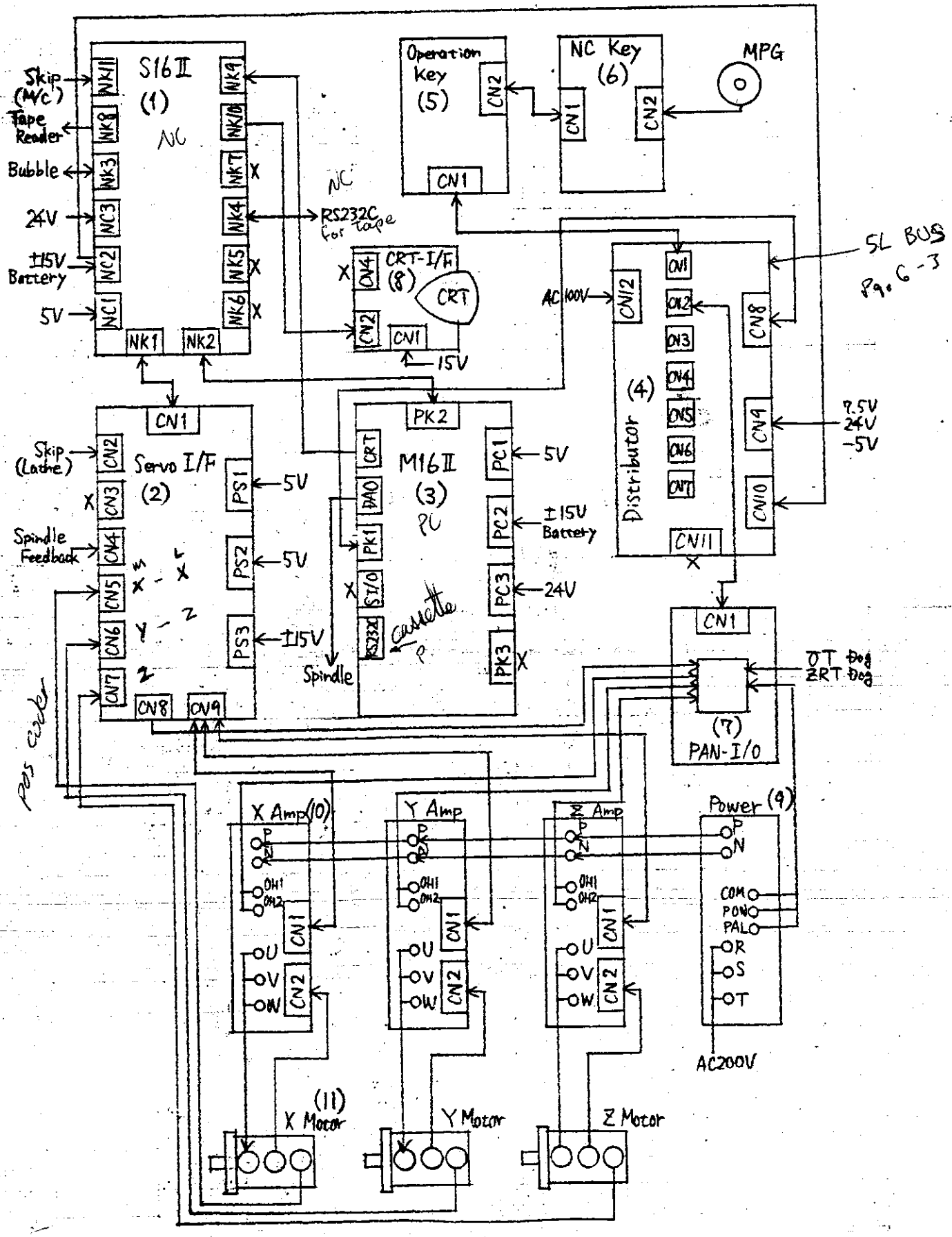
(1-3) M16Ⅱ slaves list

No.	Name	Input			Output				A/B phase	Consumption current		Dimension mm × mm	Note
		KEY SW	DC 24V	Total	LED	Open collector	SSR	Total		Vin (A)	24V (A)		
1	OPIO-MC	112	16	128	112	16	0	128	×	2.0	0.16	263 × 288	Operation board for MC
2	OPIO-L	96	16	112	96	16	0	112	×	1.7	0.16	265 × 230	Operation board for L
3	PAN-I/O	0	96	96	0	72	0	72	○	1.5	0.96	230 × 310	I/O for panel
4	INO-4B	0	23 +FA	24	0	3	13	16	○	0.7	0.37	170 × 270	ATC (VM)
5	INO-10	0	23 +FA	24	0	9	15	24	○	0.7	0.39	170 × 270	
6	INO-11	0	31 +FA	32	0	6	18	24	○	0.8	0.5	190 × 300	
7	INO-12	0	47 +FA	48	0	32	16	48	○	1.0	0.64	220 × 340	
8	INO-13	0	12	12 (16)	0	4	0	4 (8)	×	0.6	0.12	170 × 180	
9	INO-14	0	15 +FA	16	0	3	5	8	○	0.8	0.21	170 × 275	
10	INO-15	0	24	24	0	17	0	17 (24)	○	0.8	0.24	185 × 195	
11	INO-16	0	15 +FA	16	0	0	12	12 (16)	○	0.6	0.28	200 × 200	
12	IO-128F	0	128	128	0	128	0	128	○	2.0	1.28	230 × 410	

(Note) +FA : 1 input for the fuse alarm (FA) of each slave.

(2) System connection

(2-1) Connectors and wiring



(2-2) S16II connectors

NK1 (Servo I/F)

59	57	55	53	51	49	47	45	43	41	39	37	35	33	31	29	27	25	23	21
$\overline{WAIT}$	SYCLK	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0	$\overline{IOR}$	$\overline{IOW}$	$\overline{MEMW}$	$\overline{MEMR}$	$\overline{RESET}$	$\overline{S2}$	$\overline{S1}$	$\overline{EXCS}$	$\overline{SQ}$	$\overline{INT3}$
60	58	56	54	52	50	48	46	44	42	40	38	36	34	32	30	28	26	24	22
GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	$\overline{INTA}$	CAS2

19	17	15	13	11	9	7	5	3	1
$\overline{INT2}$	$\overline{INT1}$	AB14	AB12	AB10	AB8	AB6	AB4	AB2	AB0
20	18	16	14	12	10	8	6	4	2
CAS1	CAS0	AB15	AB13	AB11	AB9	AB7	AB5	AB3	AB1

NK2 (M16II)

49	47	45	43	41	39	37	35	33	31	29	27	25	23	21	19	17	15	13	11
	$\overline{RDNDP}$	$\overline{ITNDP}$	$\overline{BSYNDP}$	$\overline{WTNDP}$	$\overline{CSNDP}$	GN	DPAB9	DPAB8	DPAB7	DPAB6	DPAB5	DPAB4	DPAB3	DPAB2	DPAB1	DPAB0	DPDB7	DPDB6	DPDB5
50	48	46	44	42	40	38	36	34	32	30	28	26	24	22	20	18	16	14	12
	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN

9	7	5	3	1
DPDB4	DPDB3	DBDB2	DPDB1	DPDB0
10	8	6	4	2
GN	GN	GN	GN	GN

NK3 (Bubble Memory)

33	31	29	27	25	23	21	19	17	15	13	11	9	7	5	3	1
$\overline{TxRQ}$	$\overline{IRQ}$	$\overline{PF}$	GN	GN	GN	$\overline{RD}$	D0	GN	D3	D4	GN	D7	DPAR	A0	A2	GN
34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2
GN	$\overline{TxAK}$	GN	$\overline{RESET}$		EXCLK	$\overline{WR}$	GN	D1	D2	GN	D5	D6	GN	GN	A1	$\overline{ES}$

NK4 (RS232C)

25	23	21	19	17	15	13	11	9	7	5	3	1
					DCD1	GN		CTS1	RTS1	RxD1	TxD1	FG
26	24	22	20	18	16	14	12	10	8	6	4	2
						DTR1						

NK5 (RS232C)

25	23	21	19	17	15	13	11	9	7	5	3	1
					DCD2	GN		CTS2	RTS2	RxD2	TxD2	FG
26	24	22	20	18	16	14	12	10	8	6	4	2
						DTR2						

NK6 (RS232C)

25	23	21	19	17	15	13	11	9	7	5	3	1
					DxD3	GN		CTS3	RTS3	RxD3	TxD3	FG
26	24	22	20	18	16	14	12	10	8	6	4	2
						DTR3						

NK7 (RS422)

11	12	13	14	15	16
SRD	$\overline{SRD}$	RxC	$\overline{RxC}$		

	7	8	9	10
	GN	GN		

1	2	3	4	5	6
STD	$\overline{STD}$	TxC	$\overline{TxC}$		

NK8 (Tape Reader)

39	37	35	33	31	29	27	25	23	21	19	17	15	13	11	9	7	5	3	1
SG		$\overline{SPR}$	$\overline{FR}$	STA	CH8	CH7	CH6	CH5	CH4	CH3	CH2	CH1							
40	38	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2
	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN				

NK9 (CRT<M16II>)

11	12	13	14	15	16
$\overline{RS}$	$\overline{GS}$	$\overline{BS}$			

	7	8	9	10
	GN	GN		

1	2	3	4	5	6
$\overline{VIDEO}$	GN	$\overline{VSYNC}$	$\overline{HSYNC}$	$\overline{HLIGT}$	GN

NK10 (CRT<CRT-I/F>)

11	12	13	14	15	16
RED	$\overline{RED}$	GRN	$\overline{GRN}$	BRU	$\overline{BRU}$

	7	8	9	10
	HSYC	$\overline{HSYC}$	VSYC	$\overline{VSYC}$

1	2	3	4	5	6
VDO	$\overline{VDO}$	HIGT	$\overline{HIGT}$	GN	GN

NK11 (Skip)

6	7	8
SKIP2	GN2	

	4	5

1	2	3
SKIP1	GN2	

NC1

1	2	3	4	5	6
5V	5V	5V	GN	GN	GN

NC2

1	2	3	4	5	6	7	8	9
15V	15V	-15V	-15V	BATRY	BATRY	NC RDY+	NC RDY-	GN

NC3

1	2	3	4
24V	24V	GN2	GN2

(2-3) Servo I/F connectors

CN1 (S16Ⅱ)

39	37	35	33	31	29	27	25	23	21	19	17	15	13	11	9	7	5	3	1
$\overline{IORD}$	$\overline{IOWR}$	$\overline{MWR}$	$\overline{MRD}$	$\overline{RESET}$	$\overline{S2}$	$\overline{S1}$	$\overline{EXCS}$	$\overline{S0}$	$\overline{INT3}$	$\overline{INT2}$	$\overline{INT1}$	AB14	AB12	AB10	AB8	AB6	AB4	AB2	AB0
40	38	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2
GN	GN	GN	GN	GN	GN	GN	GN	$\overline{INTA}$	CAS2	CAS1	CAS0	AB15	AB13	AB11	AB9	AB7	AB5	AB3	AB1

59	57	55	53	51	49	47	45	43	41
$\overline{wait}$	SYCLK	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
60	58	56	54	52	50	48	46	44	42
GN	GN	GN	GN	GN	GN	GN	GN	GN	GN

CN2 (Skip)

11	12	13	14	15	16
DECX	DECY	DECZ		24V	24V
	7	8	9	10	
	EDECX	EDECY	EDECZ		
1	2	3	4	5	6
PLX	NLX	PLY	NLY	PLZ	NLZ

(*) +X −X +Z −Z (**) Skip

(*) Q Setter

(**) Z Setter

CN3 (Output)

14	15	16	17	18	19	20
SU14	SU15	SU16	24V	24V	GN	GN
8	9	10	11	12	13	
SU8	SU9	SU10	SU11	SU12	SU13	
1	2	3	4	5	6	7
SU1	SU2	SU3	SU4	SU5	SU6	SU7

CN4 (Spindle Position Coder)

20	19	18	17	16	15	14
FG	*PBP	PBP	*PAP	PAP	*PZP	PZP
13	12	11	10	9	8	
7	6	5	4	3	2	1
	5V	5V	5V	GN	GN	GN

CN5 (X Axis PG)

20	19	18	17	16	15	14
FG	*PBX	PBX	*PAX	PAX	*PZX	PZX
13	12	11	10	9	8	
ØH1	ØHA	TSBX	TSAX			
7	6	5	4	3	2	1
	5V	5V	5V	GN	GN	GN

CN6 (Y Axis PG)

20	19	18	17	16	15	14
FG	*PBY	PBY	*PAY	PAY	*PZY	PZY
13	12	11	10	9	8	
ØHA	ØHB	TSBY	TSAY			
7	6	5	4	3	2	1
	5V	5V	5V	GN	GN	GN

CN7 (Z Axis PG)

20	19	18	17	16	15	14
FG	*PBZ	PBZ	*PAZ	PAZ	*PZZ	PZZ
13	12	11	10	9	8	
ØHB	ØHZ	TSBZ	TSAZ			
7	6	5	4	3	2	1
	5V	5V	5V	GN	GN	GN

CN8 (M16II Slave)

14	15	16	17	18	19	20
CMZ	SPR3	LIMZ	RSTZ	ALMIZ	ALMZZ	ØH2
8	9	10	11	12	13	
CMY	SPRZ	LIMY	RSTY	ALMIY	ALMZY	
1	2	3	4	5	6	7
CMX	SPR1	LIMX	RSTX	ALMIX	ALMZX	ØH1

CN9 (X.Y.Z Amp)

50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
CRZ		/RDYZ				SRR3	ALMZZ	ALMIZ	CMZ	LiMZ	RSTZ	FG	FG	ECZ	TSAZ	TSAY	TSAX

32	31	30	29	28	27	26	25	24	23	22	21	20	19	
CRY		/RDYY		SPRZ	ALMZY	ALMIY	CMY	LiMY	RSTY	FG	FG	ECY		

18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CRX		/RDYX				SPR1	ALMZX	ALMIX	CMX	LiMX	RSTX	FG	FG	ECX	VCMDZ	VCMDY	VCMDX

PS1

1	2	3	4	5	6
5V	5V	5V	GN	GN	GN

PS2

1	2	3	4	5	6
5V	5V	5V	GN	GN	GN

PS3

1	2	3	4	5	6	7	8	9
+15V	+15V	+15V	GN	GN	GN	-15V	-15V	-15V

(2-4) MI6II connectors

PK1 (SL_BUS)

39	37	35	33	31	29	27	25	23	21	19	17	15	13	11
TP	TP	TP	TP	Vin	TXEN	PCRDYP		PB4	PA4	PB3	PA3	PB2	PA2	PB1
40	38	36	34	32	30	28	26	24	22	20	18	16	14	12
TN	TN	TN	TN	G2		PCRDYN		G2	G2	G2	G2	G2	G2	G2

9	7	5	3	1
PA1	G1			
10	8	6	4	2
G2	G1			

PK2 (S16Ⅱ)

49	47	45	43	41	39	37	35	33	31	29	27	25	23	21	19	17
INT1	$\overline{RDNDP}$	$\overline{TNDP}$	$\overline{BSYNDP}$	$\overline{WTNDP}$	$\overline{CSNDP}$	G1	DPAB9	DPAB8	DPAB7	DPAB6	DPAB5	DPAB4	DPAB3	DPAB2	DPAB1	DPAB0
50	48	46	44	42	40	38	36	34	32	30	28	26	24	22	20	18
G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1

15	13	11	9	7	5	3	1
DPDB7	DPDB6	DPDB5	DPDB4	DPDB3	DPDB2	DPDB1	DPDB0
16	14	12	10	8	6	4	2
G1	G1	G1	G1	G1	G1	G1	G1

PK3 (Test)

29	27	25	23	21	19	17	15	13	11	9	7	5	3	1
G1	P1C6	P1C4	P1C2	P1C0	G1	P1B6	P1B4	P1B2	P1B0	G1	P1A6	P1A4	P1A2	P1A0
30	28	26	24	22	20	18	16	14	12	10	8	6	4	2
G1	P1C7	P1C5	P1C3	P1C1	G1	P1B7	P1B5	P1B3	P1B1	G1	P1A7	P1A5	P1A3	P1A1

RS232C

13	12	11	10	9	8	7	6	5	4	3	2	1
			SDL	SDH	DCD	G1		CTS	RTS	TXD	RXD	

25	24	23	22	21	20	19	18	17	16	15	14
					DTR						

SI/O

6	7	8
SRD	$\overline{SRD}$	

4	5
BAUDO	$\overline{BAUDO}$

1	2	3
STD	$\overline{STD}$	G1

DAO

8	7	6

5	4
	G1

3	2	1
G1	DAOUT	DAOUT

CRT (S16Ⅱ)

11	12	13	14	15	16
$\overline{BS}$	$\overline{GS}$	$\overline{BS}$			

	7	8	9	10
	G1	G1		

1	2	3	4	5	6
VIDEO	G1	$\overline{VSYNC}$	IISYNC	$\overline{IILIGT}$	G1

PC1

1	2	3	4	5	6
5V	5V	5V	G1	G1	G1

PC2

1	2	3	4	5	6	7	8	9	10
$\overline{WTEN}$	G2	15V	15V	−15V	−15V	BATRY	BATRY	G1	G1

PC3

1	2	3	4
24V	24V	G2	G2

(2-5) SL_BUS distributor connectors

CN1 (Slave 1)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TP	TN	G2	Vin	G2	−5V	24V				EMG 1	EMG 2									AC100V (1)	AC100V (2)	E	

CN2 (Slave 2)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TP	TN	G2	Vin	G2	−5V	24V				EMG 1	EMG 2									AC100V (1)	AC100V (2)	E	

CN3 (Slave 3)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TP	TN	G2	Vin	G2	−5V	24V	PA1	PB1	G2	EMG 1	EMG 2									AC100V (1)	AC100V (2)	E	

CN4 (Slave 4)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TP	TN	G2	Vin	G2	−5V	24V	PA2	PB2	G2	EMG 1	EMG 2									AC100V (1)	AC100V (2)	E	

CN5 (Slave 5)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TP	TN	G2	Vin	G2	−5V	24V	PA3	PB3	G2	EMG 1	EMG 2									AC100V (1)	AC100V (2)	E	

CN6 (Slave 6)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TN	TN	G2	Vin	G2	−5V	24V	PA4	PB4	G2	EMG 1	EMG 2									AC100V (1)	AC100V (2)	E	

CN7 (Slave 7)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TP	TN	G2	Vin	G2	−5V	24V				EMG 1	EMG 2									AC100V (1)	AC100V (2)	E	

CN8 (M16Ⅱ Master)

1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39
				PA1	PB1	PA2	PB2	PA3	PB3	PA4	PB4		PCRDY P		Vin	TP	TP	TP	TP
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
				G2	G2	G2	G2	G2	G2	G2	G2		PCRDY N		G2	TN	TN	TN	TN

CN9 (Power)

1	2	3	4	5	6
Vin	Vin	−5V	24V	G2	G2

CN10 (NC Ready)

1	2	3
NCRDY N	NCRDY P	

CN11 (SL_BUS Tester)

1	2	3	4	5	6	7	8
TP (T)	TN (T)	G3	VB1	VB1	G3	G3	

CN12 (AC100V)

1	2	3	4	5	6	7	8	9
AC100V (1)	AC100V (1)	AC100V (1)	AC100V (1)	AC100V (2)	AC100V (2)	AC100V (2)	AC100V (2)	E

(2-6) OPIO (Slave) connectors

CN1 (SL_BUS Distributor)

1	2	3	4	5	6	7	8	9	10	11	12
TP	TN	G2	VIN	G2	-5V	24V	-	-	G2	EMG 1	EMG 2

CN2 (NC Key)

1	2	3	4	5	6
TP	TN	G2	VIN	G2	Vcc

CN3 (SMCN-2B)

1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	13a	14a	15a	16a	17a	18a	19a	20a	21a	22a	23a	24a	25a	26a	27a	28a	29a	30a	31a	32
Di0	Di2	Di4	Di6	-	D00	D02	D04	D06	-	$\overline{DV0}$	$\overline{DV2}$	$\overline{G0}$	$\overline{G2}$	$\overline{STB}$	$\overline{A}$	B	D	$\overline{F}$	$\overline{INT0}$	$\overline{PSEN}$	TP	PC3	Vcc	Vcc	G2	G2	-5v	24v	24v	G2	G
1c	2c	3c	4c	5c	6c	7c	8c	9c	10c	11c	12c	13c	14c	15c	16c	17c	18c	19c	20c	21c	22c	23c	24c	25c	26c	27c	28c	29c	30c	31c	32
Di1	Di3	Di5	Di7	-	D01	D03	D05	D07	-	$\overline{DV1}$	$\overline{DV3}$	$\overline{G1}$	$\overline{G3}$	$\overline{OC}$	A	C	E	-	-	-	TN	-	Vcc	Vcc	G2	G2	-5v	24v	24v	G2	G

CN9 (Emergency Stop)

1	2	3
EMG 1	EMG 2	-

(2-7) NC key connectors

CN1 (OPIO)

1	2	3	4	5	6
TP	TN	G2	Vin	G2	G2

CN2 (MPG)

6	7	8
B Phase	G2	

4	5
5V	G2

1	2	3
A Phase	G2	

(2-8) PAN-I/O connectors

CN1 (SL_BUS Distributor)

1	2	3	4	5	6	7	8	9	10	11	12
TP	TN	G2	VIN	G2	-5V	24V	PA	PB	G2	EMG 1	EMG 2

CN2 (SNCN-2B)

1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	13a	14a	15a	16a	17a	18a	19a	20a	21a	22a	23a	24a	25a	26a	27a	28a	29a	30a	31a	32a
DI0	DI2	DI4	DI6	-	DO0	DO2	DO4	DO6	-	$\overline{DV0}$	$\overline{DV2}$	$\overline{G0}$	$\overline{G2}$	$\overline{STB}$	$\overline{A}$	B	D	$\overline{F}$	$\overline{INT0}$	$\overline{PSEN}$	TP	PC3	VCC	VCC	G2	G2	-5V	24V	24V	G2	G2
1c	2c	3c	4c	5c	6c	7c	8c	9c	10c	11c	12c	13c	14c	15c	16c	17c	18c	19c	20c	21c	22c	23c	24c	25c	26c	27c	28c	29c	30c	31c	32c
DI1	DI3	DI5	DI7	-	DO1	DO3	DO5	DO7	-	$\overline{DV1}$	$\overline{DV3}$	$\overline{G1}$	$\overline{G3}$	$\overline{OC}$	A	C	E	-	-	-	TN	-	VCC	VCC	G2	G2	-5V	24V	24V	G2	G2

(2-9) CRT-I/F connectors

CN1 (Power)

1	2	3	4	5	6
15V	15V	15V	GN	GN	GN

CN2 (S16II)

11	12	13	14	15	16

	7	8	9	10
	HSYC	$\overline{HSYC}$	VSYC	$\overline{VSYC}$

1	2	3	4	5	6
VD0	$\overline{VD0}$	HIGT	$\overline{HIGT}$	G1	G1

CN4 (M16II) Not Used

11	12	13	14	15	16

	7	8	9	10
	G1	G1		

1	2	3	4	5	6
$\overline{VIDEO}$	G1	$\overline{VSYC}$	$\overline{HSYC}$	HL1GT	G1

(2-10) Power unit (SANYO) connectors

TB1 (AC In)

R	S	T	E	PON	PAL	COM

TB2 (DC Out) 250 - 320 V DC

P	P	P	P	N	N	N	N

(2-11) Amplifier (SANYO) connectors

TB (Power) [AC 100]

P	N	U	V	W	E	r	t	OH1	OH2

L DC 300 V L To motor ⏚ OVERHEAT

CN1 (Servo I/F)

17	18	19	20	CN9-50 21	22	23	24	CN9-48 25
				15G	IA	VTG		RGSO

10	11	12	13	14	15	16
RESET	VR1		VR2			

1	2	CN9-36 3	CN9-3 4	5	CN9-43 6	CN9-42 7	8	9
		VCMD	VGND	Ready A	Com	Ready B	B Com	

Command signal 6V / 1000 rpm

To CN9 PRDY (AXIS)

CN2 (Motor)

11	12	13	14	15	16
E		15G	15G	-15V	-15V

7	8	9	10
CSC	15G	15G	15G

1	2	3	4	5	6
CSB	CSA	TG	TG-G	+15V	+15V

(2-12) Servo motor (SANYO) connectors

(Power)

A	B	C	D
U	V	W	E
E	F	G	

(Commutation Sensor)

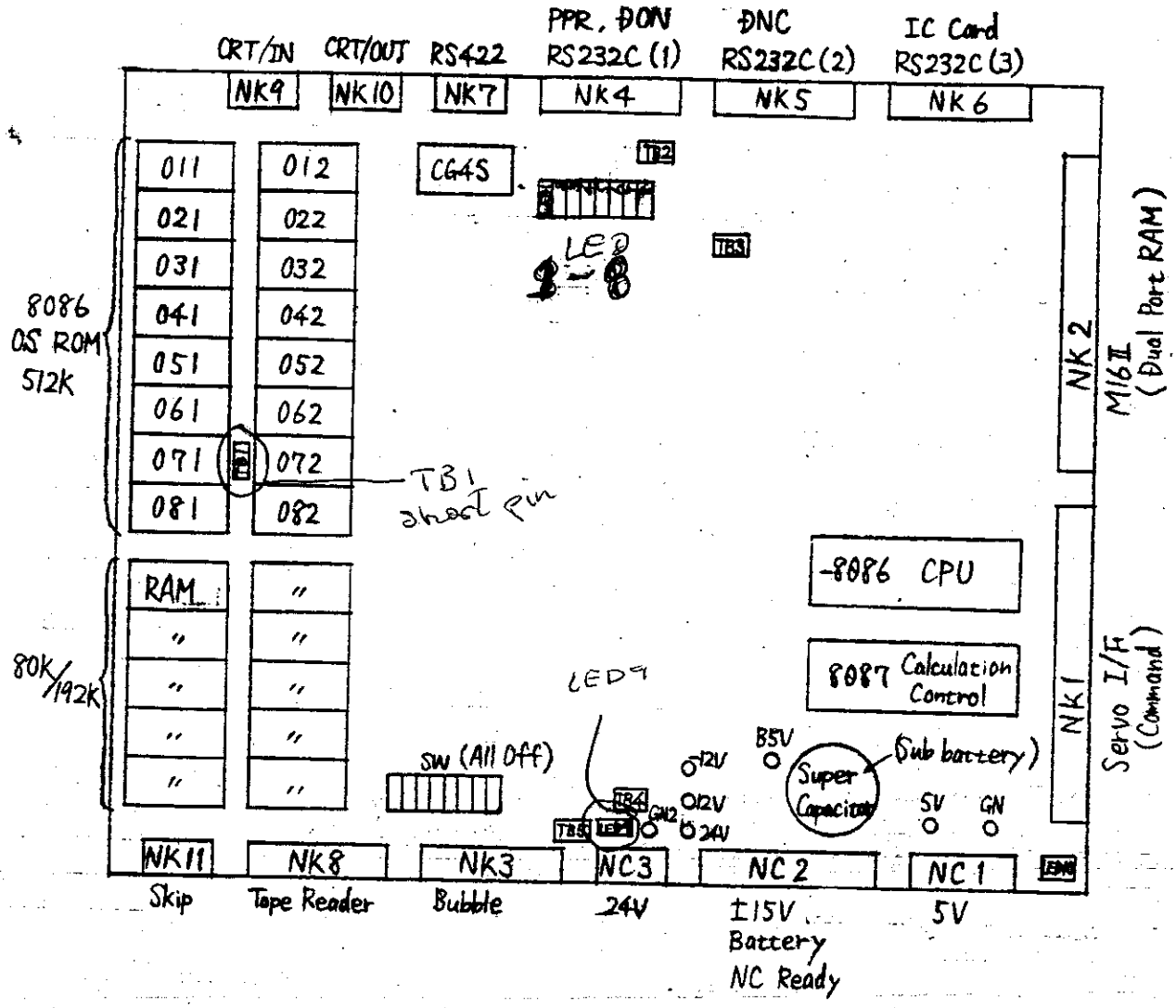
A	B	C	D	E
CSA	CSB	CSC	15G	E
F	G	H	I	J
15G	TG-G	TG		15G
K	L	M	N	
15G	15G	+15V	-15V	

(Optical Coder)

A	B	C	D	E	F
PA (PB)	PB (PA)	5V	*PA (*PB)	*PB (*PA)	PZ
G	H	J	K	L	M
*PZ	FG	5V	5V		
N	P	R	S	T	
GN	GN			GN	

(3) NC master P.C.B. (S16Ⅱ)

(3-1) S16Ⅱ construction



S16Ⅱ (Type 01-04-02)

RAM 80Kbyte

ROM Max 512k <L01XX, M01XX (seal) only>

S16Ⅱ (Type 01-04-03)

RAM 192kbyte

ROM Max 512K <L02XX, M02XX (seal) only>

(3-2) Short Pin

Name	Content	Normal
TB1	ROM (27128/27256) Select	Short
TB2	Not used	Open
TB3	Not used	Open
TB4	Watchdog alarm disable	Open
TB5	Maintenance	Short

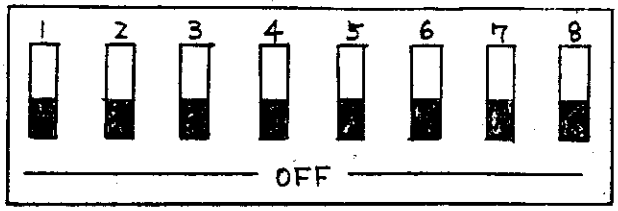
(3-3) LED

Name	Content
LED 1	
2	
3	
4	
5	
6	50msec interrupt
7	
8	Bubble memory access
9	Battery alarm
10	Power On (Green)

(3-4) Voltage check pin

Name	Content	Name	Content
GN.	Ground for 5V. B5V. ±12V.	12V.	12V.
GNZ.	Ground for 24V.	-12V.	-12V.
5V.	5V.	24V	24V
B5V.	Battery.		

(3-5) DIP switch.



<Note>
All should be OFF.

(3-6) Appendix

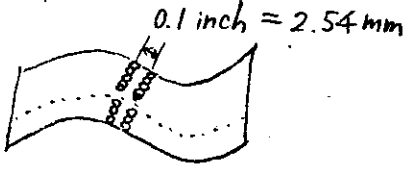
◦ CPU Language

Bit

Byte = 8 Bits

1 K Bytes = 1024 Bytes (3FF(H))

◦ NC Tape



Tape (ISO / EIA) ⟹ Memory (ASCII)

1 Word (1 Byte) length = 0.1 inch = 2.54 mm

∴ 32 K Byte = 0.1 inch × 32 × 1024 = 3276.8 inch

= 2.54 mm × 32 × 1024 ≒ 83 m

◦ NC-RAM contents

i) Parameter

ii) Offset

iii) Work Offset

iv) Macro

v) Override Memory

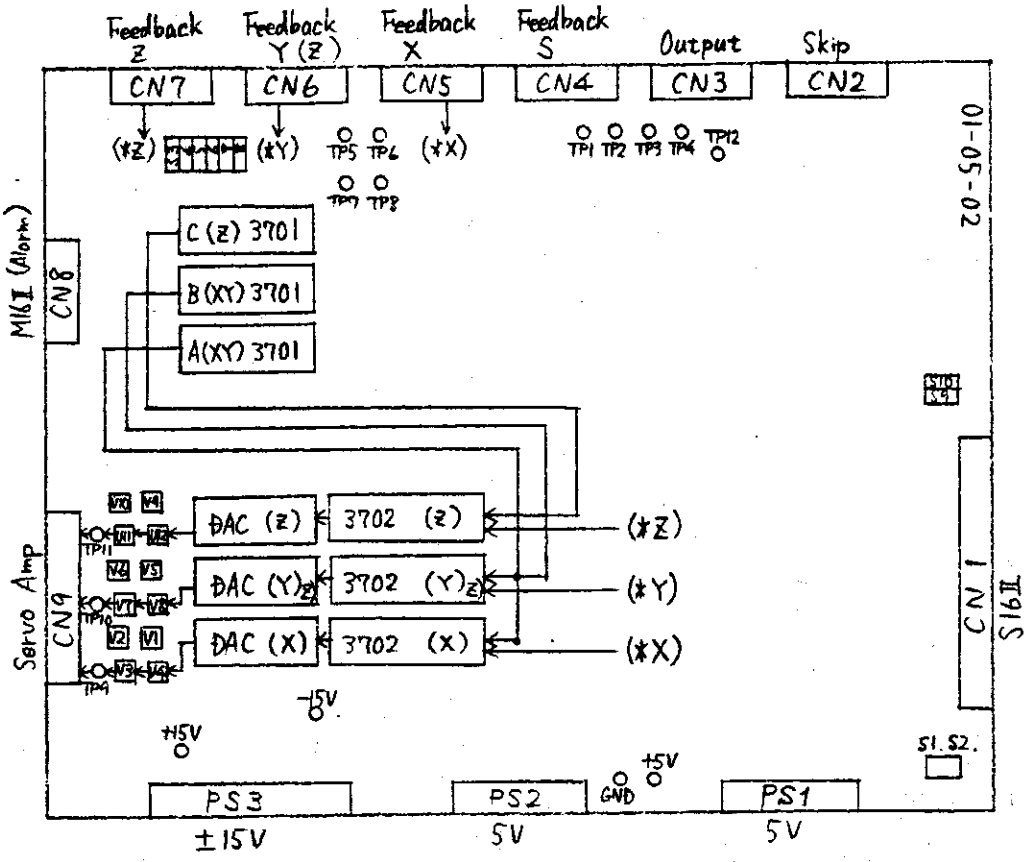
vi) Safety Guard

vii) Directory

viii) NC Program

(4) Servo I/F P.C.B. (01-05-02/01-05-03)

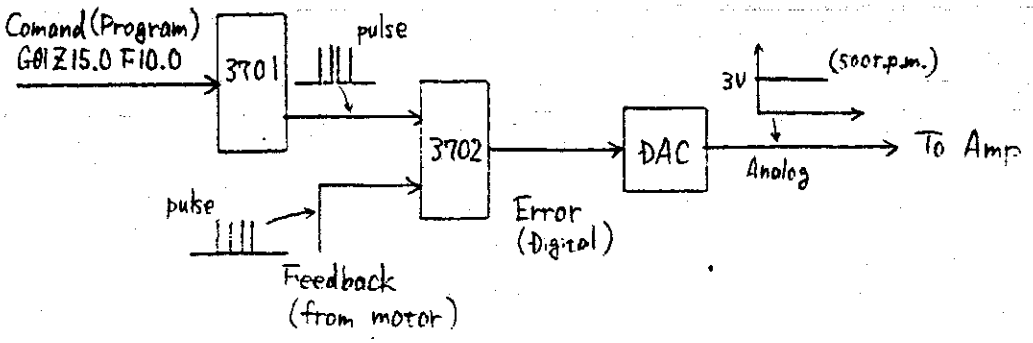
(4-1) Construction for 01-05-02



3701 LSI (Interpolation pulses generator)

3702 LSI (Position controller)

DAC (Digital to analog converter)



(4-2) Short Pin (01-05-02)

S2	G	S1	
X	X	X	1st Servo I/F P.C.B. (X.Y.Z) or (X.Z)
X	O	O	2nd Servo I/F P.C.B. (4.5.6)
O	O	X	3rd Servo I/F P.C.B. (7.8.9)

X axis

S3	S4	
X	X	Feedback (X4)
O	X	" (X2)
X	O	" (X1)
O	O	" (X0)

Y (Z) axis

S5	S6	
X	X	Feedback (X4)
O	X	" (X2)
X	O	" (X1)
O	O	" (X0)

Z axis

S7	S8	
X	X	Feedback (X4)
O	X	" (X2)
X	O	" (X1)
O	O	" (X0)

External interrupt (Skip)

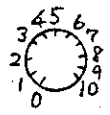
S9	S10	
X	X	PLX.NLX, PLY.NLY.PLZ.NLZ (Off interrupt)
O	X	PLX.NLX.PLY.NLY (Off interrupt) PLZ.NLZ (On interrupt)
X	O	PLX.NLX (Off interrupt) PLY.NLY.PLZ.NLZ (On interrupt)
O	O	PLX.NLX.PLY.NLY.PLZ,NLZ (On interrupt)

(Note)

In case of the NY(HT), set a short pin to S5.

(4-3) Volume (01-05-02)

Name	Content	Adjustment
VR1	DAC (X) Gain and Offset	Scale 5
VR2	〃	〃
VR3	X axis velocity output (Gain)	(Note)
VR4	〃 (Offset)	TP9 output to 0 (V)
VR5	DAC (Y(z)) Gain and Offset	Scale 5
VR6	〃	〃
VR7	Y(z) axis velocity output (Gain)	(Note)
VR8	〃 (Offset)	TP10 output to 0 (V)
VR9	DAC (Z) Gain and Offset	Scale 5
VR10	〃	〃
VR11	Z axis velocity output (Gain)	(Note)
VR12	〃 (Offset)	TP11 output to 0 (V)

Scale 

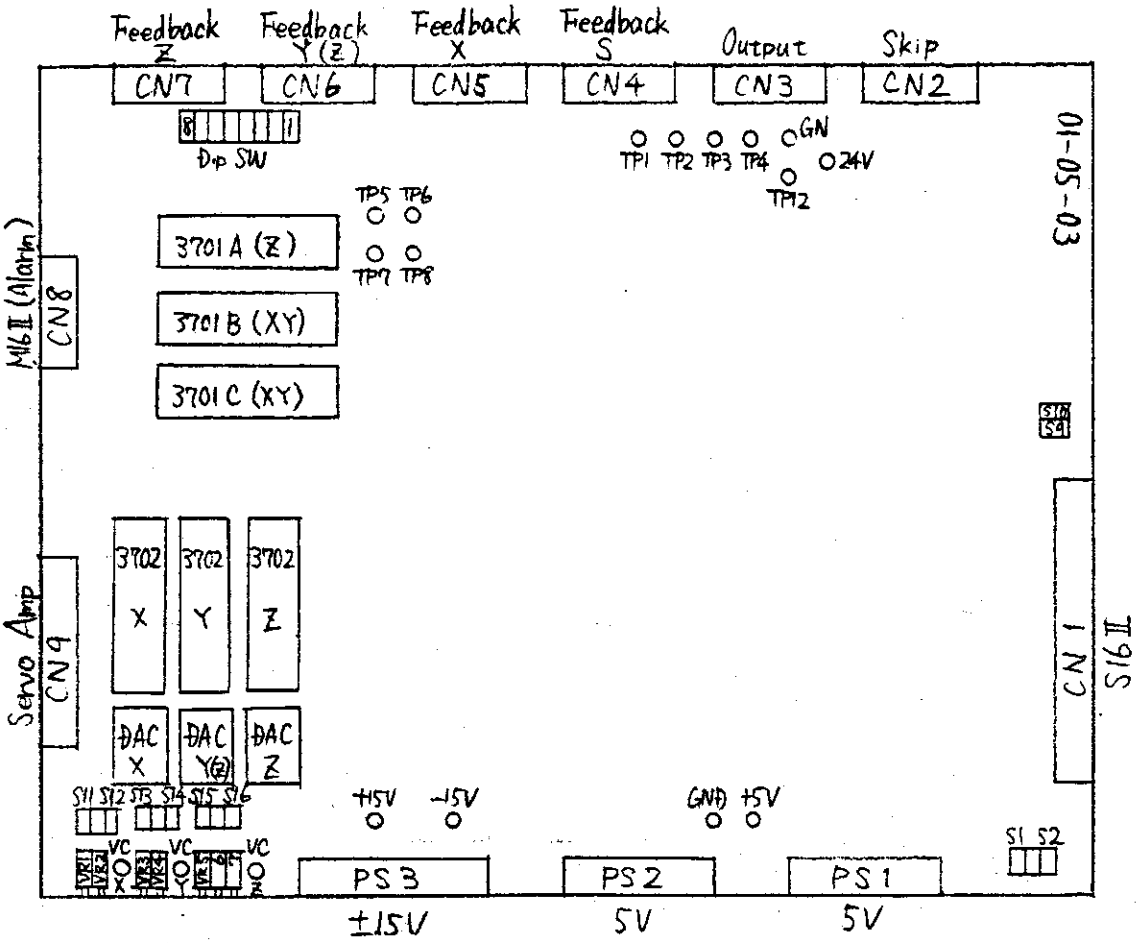
(Note)

Model	Scale		
	VR3	VR7	VR11
VK.VM.HF	7.5	7.5	7.5
NP	9	9	
HT	4.5	9	

(4-4) Check Pin (01-05-02)

Name	Content	
GND	Signal ground	
+5V		
+15V		
-15V		
TP1	Clock for feed speed	166.6kHz
2	Clock for pitch error compensation	333.3kHz
3	Clock for command pulse	1.0MHz
4	Clock for 3701, 3702	2.0MHz
5	Clock for interpolation 3701A	
6	Clock for interpolation 3701B	
7	Clock for interpolation 3701C	
8	+6V	
9	Velocity command voltage for X axis	
10	Velocity command voltage for Y(Z) axis	
11	Velocity command voltage for Z axis	
12	Clock for backlash offset stroke	

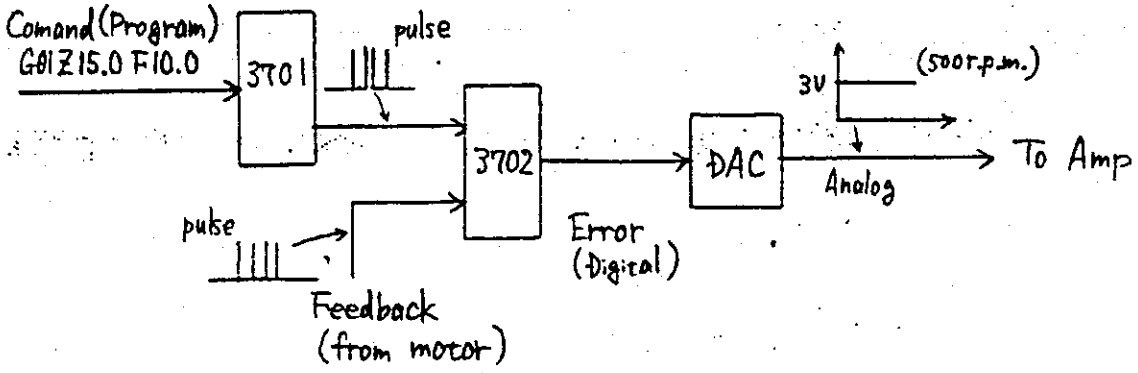
(4-5) Construction for 01-05-03



3701 LSI (Interpolation pulses generater)

3702 LSI (Position controller)

DAC (Digital to analog converter)



(4-6) Short Pin (01-05-03)

S2	G	S1	
X	X	X	1st Servo I/F P.C.B. (X.Y.Z) or (X.Z)
X	O	O	2nd Servo I/F P.C.B. (4.5.6)
O	O	X	3rd Servo I/F P.C.B. (7.8.9)

External interrupt (Skip)

S9	S10	
X	X	PLX.NLX, PLY.NLY.PLZ.NLZ (Off interrupt)
O	X	PLX.NLX.PLY.NLY (Off interrupt) PLZ.NLZ (On interrupt)
X	O	PLX.NLX (Off interrupt) PLY.NLY, PLZ.NLZ (On interrupt)
O	O	PLX.NLX.PLY.NLY, PLZ, NLZ (On interrupt)

Op-Amp Gain

X axis

S11	S12	
X	X	G = 8.18 ~ 35.87
O	X	0.09 ~ 0.69
X	O	1.53 ~ 6.95

Y (Z) axis

S13	S14	
X	X	G = 8.18 ~ 35.87
O	X	0.09 ~ 0.69
X	O	1.53 ~ 6.95

Z axis

S15	S16	
X	X	G = 8.18 ~ 35.87
O	X	0.09 ~ 0.69
X	O	1.53 ~ 6.95

(Note)

In case of VK.VM.HF, set short pins to S12.S14.S16.

In case of NP, NY(HT), NR, set short pins to S12.S14.

(4-7) Volume (01-05-03)

Name	Content	Adjustment
VR1	X axis velocity output (Offset)	VCMDX output to 0 (V)
2	〃 (Gain)	(Note)
3	Y(Z) axis velocity output (Offset)	VCMDY output to 0 (V)
4	〃 (Gain)	(Note)
5	Z axis velocity output (Offset)	VCMDZ output to 0 (V)
6	〃 (Gain)	(Note)
7	Direct tap (Gain)	

(Note)

~~Don't~~ turn!

(4-8) Dip switch (01-05-03)

X axis

SW1	SW2	
X	X	Feedback (X4)
O	X	〃 (X3)
X	O	〃 (X2)
O	O	〃 (X1)

Y(Z) axis

SW3	SW4	
X	X	Feedback (X4)
O	X	〃 (X3)
X	O	〃 (X2)
O	O	〃 (X1)

Z axis

SW5	SW6	
X	X	Feedback (X4)
O	X	〃 (X3)
X	O	〃 (X2)
O	O	〃 (X1)

SW7 ··· Y axis feedback disable by software.

SW8 ··· Z 〃

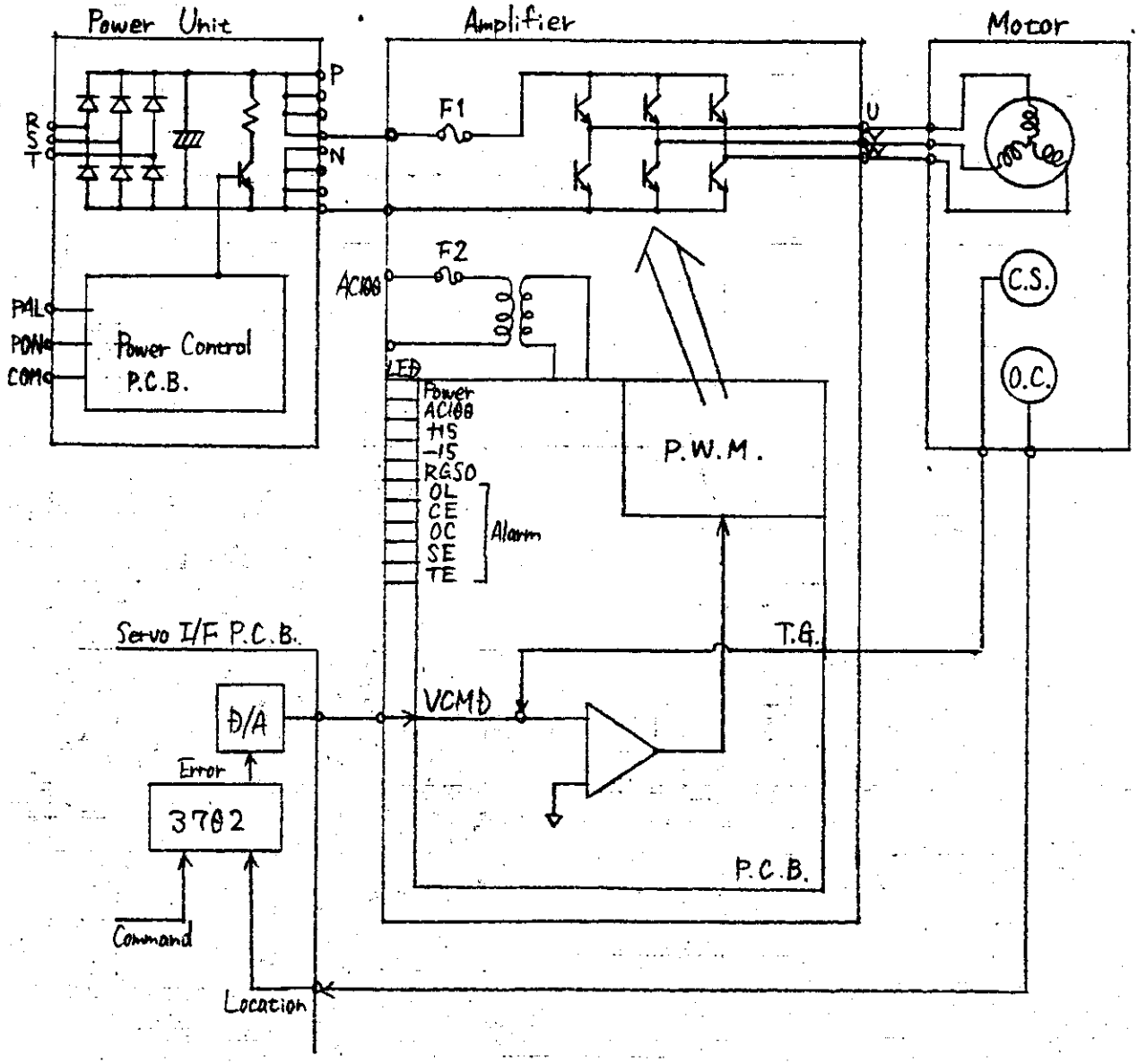
(Note) In case of the NY(HT), set the SW4.

(4-9) Check Pin (01-05-03)

Name	Content	
GND	Signal ground	
+5V		
+15V		
-15V		
TP1	Clock for feed speed	166.6kHz
2	Clock for pitch error compensation	333.3kHz
3	Clock for command pulse	1.0MHz
4	Clock for 3701, 3702	2.0MHz
5	Clock for interpolation 3701A	
6	Clock for interpolation 3701B	
7	Clock for interpolation 3701C	
8	+6V	
VCMD X	Velocity command voltage for X axis	
VCMD Y	Velocity command voltage for Y(Z) axis	
VCMD Z	Velocity command voltage for Z axis	
TP12	Clock for backlash offset stroke	
24V		

(5) Servo motor, amplifier, power unit (SANYO)

(5-1) Construction



(5-2) Power unit alarm

	Cause	Countermeasure
Power ON signal (PON-COM)	(1) R or T phase of main circuit power is disconnected.	Check the wiring connection of R and T phases.
	(2) Cable line of main power R or T phase is disconnected.	Replace cable.
	(3) Is NFB of power unit off?	Turn NFB of power unit on.
Power alarm (PAL-COM)	(1) Load inertia is too large.	Set load inertia to within the specified value.
	(2) Regenerative transistor or regenerative resistor defective	Replace power unit.
	(3) Overheating of regenerative resistor	Set load inertia to within the specified value and prolong the acceleration cycle.
	(4) Regenerative circuit control PC board defective	Replace PC board.
	(5) Input supply voltage too high.	Set input supply voltage to within specified range.
	(6) Poor motor insulation	Replace the motor.
	(7) Lead wire of motor wiring grounded	Replace the servo amplifier.
	(8) Output transistor of servo amplifier defective	Replace the servo amplifier.
	(9) NFB trip contact defective	Replace NFB.

(5-3) Amp chick pin

Terminal Symbol	Name/Check Function	Description	Remarks
*15G (GND)	0V terminal	0V in ±15V control power supply system	
+15V	+15V terminal	Positive power supply for control +15V ±0.2V DC	
-15	-15V terminal	Negative power supply for control -15V ±0.2V DC	
* VCMD	Speed control command input	Checking of speed control command input signal i) Low-speed motor: Y, Z, S, M and B types 6V/1000rpm ii) High-speed motor: H and D types 2V/1000rpm	
*VTG	Tachometer generator voltage monitor	Output voltage of the tachometer generator feedback amplifier. Voltage is positive when the motor is rotating clockwise as viewed from the end of its output shaft, and negative when rotating counterclockwise. i) Low-speed motor: Y, Z, S, M and B types 4.5V±0.5/1000rpm ii) High-speed motor: H and D types 2V±0.2/1000rpm	
*IA	Current output monitor	i) Amplifier types 015, 030 0.4 V/A ±5% ii) Amplifier type 050 0.2 V/A ±5% iii) Amplifier type 100 0.1 V/A ±5%	
CK	Clock pulse	Clock pulse signal Reference frequency for standard amplifier: 1.0MHz ±0.2MHz	
PWF	PWM signal	PWM signal Reference frequency for standard amplifier: 1K to 2KHz	
TP9	Overload detection time setting	Overload detection time setting is adjustable with VR9.	
*KP	Overspeed detection setting	Speed amplifier input voltage setting for speed control command.	
TP3	Speed amplifier output	0 ∿ ±14 V	
TP4	Current amplifier output	0 ∿ ±14 V	

(5-4) Amp LED

Indication	LED Symbol	Function	Lighting Condition
Green	AC 100V	Power reception indication	Lights when control power (100V AC, 50/60Hz) is being applied between r and t. (Normal state)
Green	+15	Power reception indication	Lights when control power +15V is being established. (Nomal state)
Green	-15	Power reception indication	Lights when control power -15V is being established. (Normal state)
Green	RGSO	RGSO ON indication	Lights when ㉑ and ㉕ of CN1 are shorted, and when the motor is operating.
Green	Power	Power reception indication	Lights when the main circuit power is supplied between P and N. (Normal state)

Indication	LED Symbol	Function	Lighting Condition
Red	O.C	Overcurrent detection	Lights when current in excess of the specified value flows to the amplifier output circuit.
Red	O.L	Overload detection	Lights when the motor is overloaded.
Red	S.E	Overspeed detection	Lights when the motor speed increases to 120% of the maximum rated rpm.
Red	C.E	Commutation error	Lights when the commutation signal error occurs.
Red	T.E	Tachometer generator disconnection detection	Lights when the tachometer generator signal line is disconnected.
Off	—	———	Remains off while no power is being supplied or during normal operation.

The red LEDs above are used for alarm indication. However, once a LED lights (an alarm is output), the alarm cannot be reset even after the trouble is removed. To reset the alarm, one of the following methods must be employed after turning RGSO off.

(i) Turn the power on again.

(ii) Short CN1- ⑩ , ㉑ , RESET terminals.

(iii) Press the reset switch mounted on the amplifier panel.

(5-5) Amp fuse

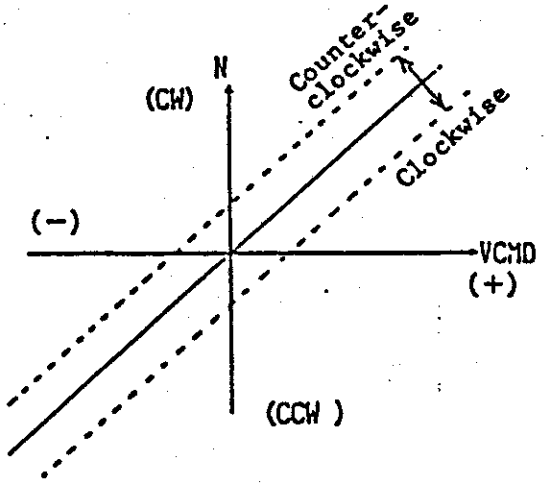
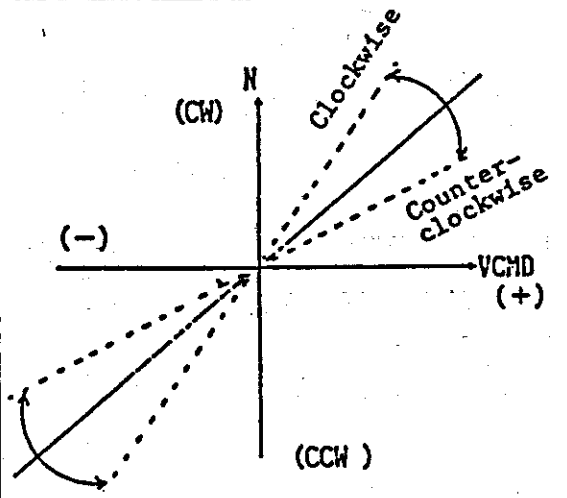
Symbol	Type and Specification	Q'ty	Manufacturer
F1	NCOS 30A fuse	1	Utsunomiya Denki (27BA050FXT)
F1	NCOS 20A fuse	1	Utsunomiya Denki (27BA030FXT)
F1	NCOS 10A fuse	1	Utsunomiya Denki (27BA015FXT)
F2	SMP 10 (10A) alarm fuse	1	Daito Tsushinki (27BA100FXT)
F2	SMP 10 (10A) alarm fuse	1	Daito Tsushinki (27BA050FXT, 27BA030FXT)

(5-6) Amp alarm

Lit Red LED	Possible Cause	Suggested Remedy
(O.C) Overcurrent	(1) Poor motor insulation	Replace the motor.
	(2) Motor lead wire not properly wired or grounded	Correct wiring.
	(3) Defective output circuit transistor of servo amplifier	Replace servo amplifier.
	(4) Faulty current detector	Replace servo amplifier.
	(5) Defective control circuit PC board	Replace PC board.
(O.L) Overload	(1) Mechanical overload	Check and adjust mechanical section.
	(2) Current limit setting error Current limit setting excessive	Set current limit properly. (Decrease current limit.)
	(3) Effective load too large Short acceleration cycle Large load inertia	Reduce effective load to within rated value.
	(4) Electrothermal circuit setting error	Set the circuit to specified value.
	(5) Motor commutation sensor angle setting error	Replace the motor.
(S.E) Speed error	(1) Defective tachometer generator	Replace the motor.
	(2) Tachometer generator wiring error	Correct tachometer generator wiring.

Lit Red LED	Possible Cause	Suggested Remedy
	(3) Speed control command input voltage is in excess of 120% of maximum rpm.	Check input command voltage and correct connections.
	(4) Relationship between speed control command input voltage and rpm improper	Readjust adjusting screw (VR2).
(C.E) Commutation error	(1) Defective commutation sensor	Replace the motor.
	(2) Faulty commutation sensor circuit wiring	Correct wiring.
	(3) Defective control circuit PC board	Replace PC board.
(T.E) Tachometer generator disconnection	(1) Tachometer generator signal line disconnection	Correct wiring.
	(2) Tachometer generator output voltage not generated	Replace the motor.
	(3) Faulty commutation sensor wiring	Correct wiring.
	(4) Defective PC board	Replace PC board.

(5-7) Amp volume

VR No.	Adjusting Function	Adjusting Method	Characteristic Change
VR1	Zero adjustment	o Adjust the offset to make the motor rotation speed approach 0 rpm when the speed control command voltage is 0V. (Ignore the drift.)	
VR2	Speed scale factor adjustment	o To increase the speed (for the same command voltage), turn this screw clockwise; to decrease the speed, turn it counter-clockwise.	
VR3	Stability adjustment	o Adjust the time constant of the servo amplifier to stabilize the operation of the control system.	o Turning this screw clockwise increases the gain and decreases the system stability. o Turning this screw counterclockwise decreases the gain and increases the system stability.
VR6	Current gain adjustment	o Adjust the current loop gain.	o Turning this screw clockwise increases the gain. o Turning it counterclockwise decreases the gain.

(Note) Never turn VR3 and VR6!

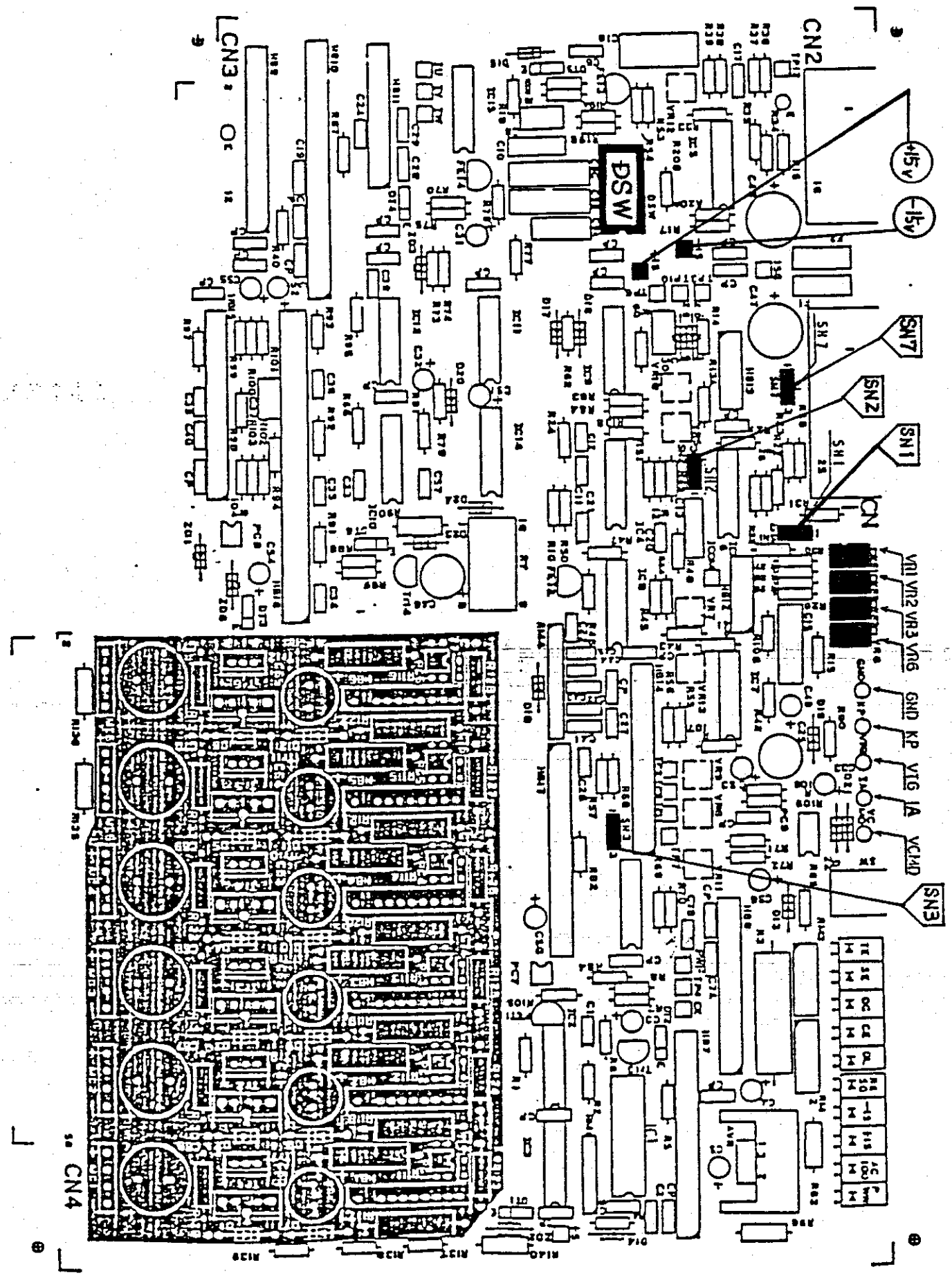
Model	Axis	Pulse Coder (pulse)	Multiply Set pin on servo IF Board	Feedback (pulse)	Pitch (mm)	Revolution (r.p.m.)	Feed (mm)	Feed (inch)	V Command (V)	Error (pulse)	Note
VK.VM.HF	X.Y.Z	2500	4	10000	10	1000	10000	394	6	5555	Standard
〃	〃	〃	〃	〃	〃	1500	15000	591	9	8333	Max
〃	〃	〃	〃	〃	〃	200	2000	79	1.2	1111	Adjust
NP	X	2000	4	8000	5	1000	5000	197	6	4444	Max
〃	〃	〃	〃	〃	〃	200	1000	39	1.2	889	Adjust
〃	Z	2000	4	8000	8	1000	8000	315	6	4444	Standard
〃	〃	〃	〃	〃	〃	250	2000	79	1.5	1111	Adjust
〃	〃	〃	〃	〃	〃	1250	10000	394	7.5	5555	Max
NY(HT)	X	4000	4	16000	8	1000	8000	315	6	8888	Standard
〃	〃	〃	〃	〃	〃	250	2000	79	1.5	2222	Adjust
〃	〃	〃	〃	〃	〃	1875	15000	591	11.25	16665	Max
〃	Z	4000	2	8000	8	1000	8000	315	6	4444	Standard
〃	〃	〃	〃	〃	〃	250	2000	79	1.5	1111	Adjust
〃	〃	〃	〃	〃	〃	1875	15000	591	11.25	8333	Max

$$\text{Error (pulse)} = \frac{\text{Pulse Coder (pulse)} \times \text{Multiply} \times 1000\ (\text{r.p.m.})}{60\ (\text{sec}) \times 30\ (\text{sec}^{-1})} \quad (:6V)$$

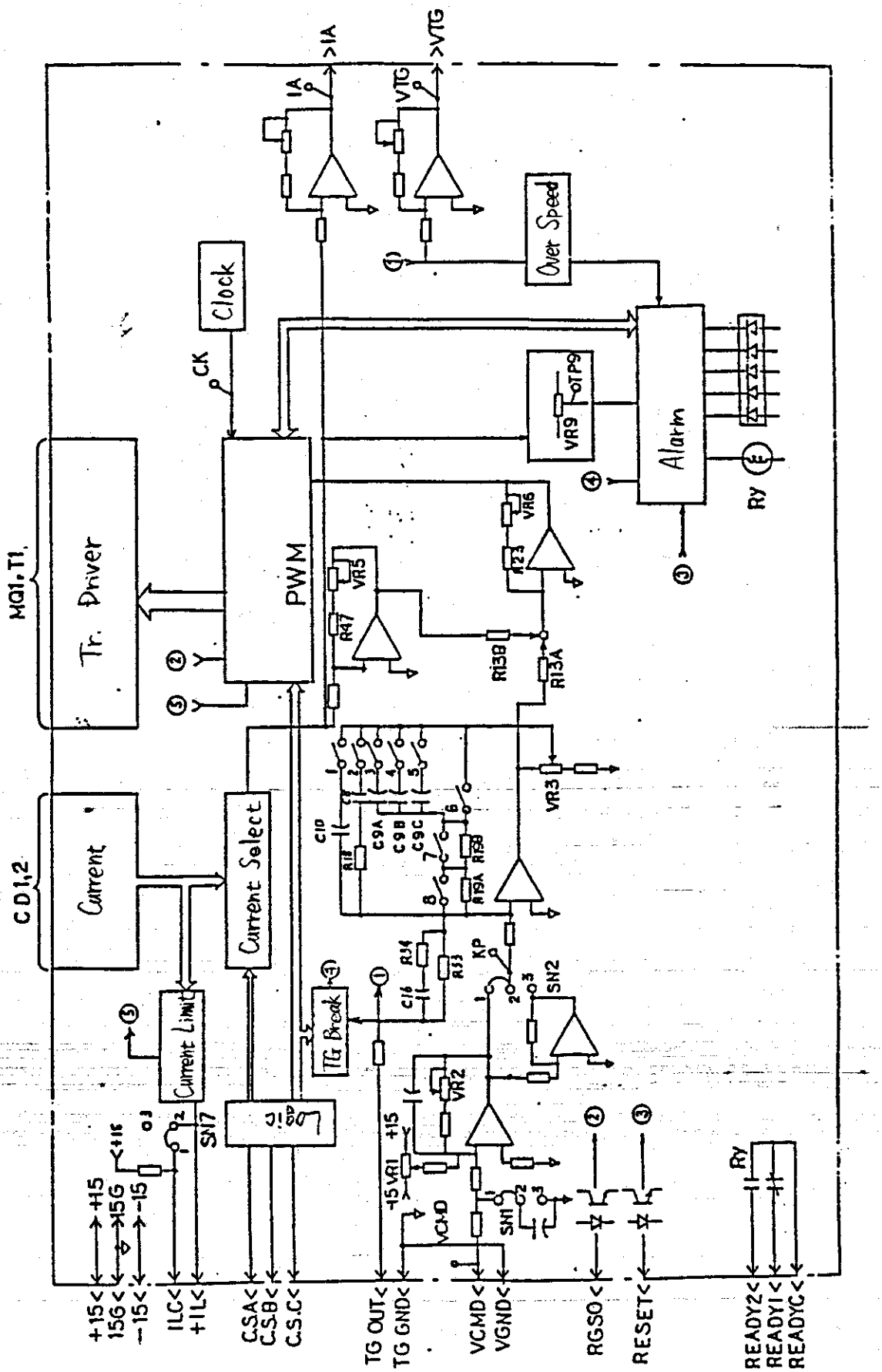
(5-9) Appendix 1 Type of Motor & Amp.

No.			Axis	MOTOR Type	MOTOR P.G.	Amp.	DSW. ON
1	M/C	VM40	X	20BH090 HXP42	LHA-250BH -S88	27BA030 FXTH1	1,2,3,7,8
2			Y	20BH090 HXP41			1,2,3,7,8
3			Z	20BH220 HBP41		27BA050 FXTH2	1,3,7
4			A	20BH040 BXP41	LHA-100BH -S88	27BA030 FXTH3	1,3,7
5		VK45	X	20BH120 HXP41	LHA-250BH -S88	27BA050 FXTH1	1,2,3,7,8
6			Y	20BH120 HXP41			1,2,3,7,8
7			Z	20BH220 HBP41		27BA050 FXTH2	1,3,7
8			A	20BH060 BXP41	LHA-100BH -S88	27BA030 FXTH3	1,3,7
9		VK55	X	20BH220 HXP41	LHA-250BH -S88	27BA050 FXTH1	1,2,3,7,8
10			Y	20BH220 HXP41			1,2,3,7,8
11			Z	20BH220 HBP41		27BA050 FXTH2	1,3,7
12			A	20BH060 BXP41	LHA-100BH -S88	27BA030 FXTH3	1,3,7
13		VK65	X	20BH220 HXP41	LHA-250BH -S88	27BA050 FXTH1	1,2,3,7,8
14			Y	20BH220 HXP41			1,2,3,7,8
15			Z	20BH330 HBP41		27BA100 FXTH2	1,3,7
16		HF300	X	20BH040 HXP41		27BA030 FXTH4	1,2
17			Y	20BH060 HXP41		27BA030 FXTH5	
18			Z	20BH060 HXP41			
19			A	27BH013 BXP41	LHA-100BH -S88	27BA015 FXT12	
20							
21	LATHE	HP15	X	20BH060 HXP42	LHA-200BH -S88	27BA030 FXTH3	1,3,7
22			Z				
23		HY15	X	20BH060 BXP41	LHA-400BH -S140	27BA030 FXTH3	
24			Z				

(5-10) Appendix 2 Location of setting on Servo Amp.

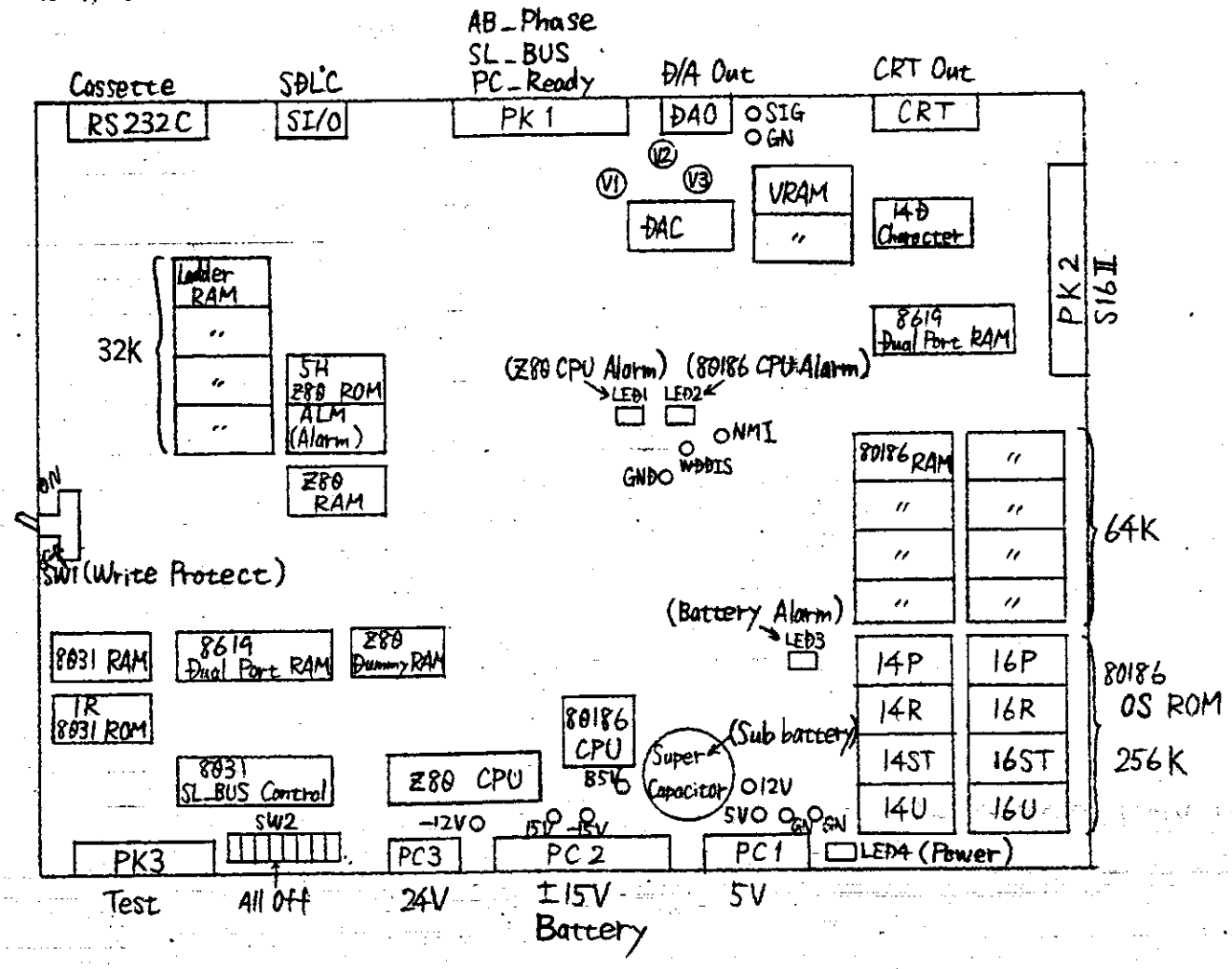


(5-11) Appendix 3 Amplifier block diagram



(6) PC master P.C.B. (M16Ⅱ) and slaves

(6-1) Construction



DAC ··· Complementary Straight Binary

V4 ··· Gain

V2 ··· DC Offset (±15V)

V3 ··· Offset

(6-2) CPU

1 Main control unit (80186 CPU)

It executes the following functions related to input/output of data and machine control of M16-II.

(1) Processing of key board input

(2) Screen-display function to CRT

(3) Input/output of data passing the serial interface (input/output of ladder-sequence data by cassette MT)

(4) Data-transfer at the interval with NC-unit

(5) Schedule control of pallet-pool line

2 Ladder-sequence control unit (Z80 CPU)

(1) Execution of ladder program

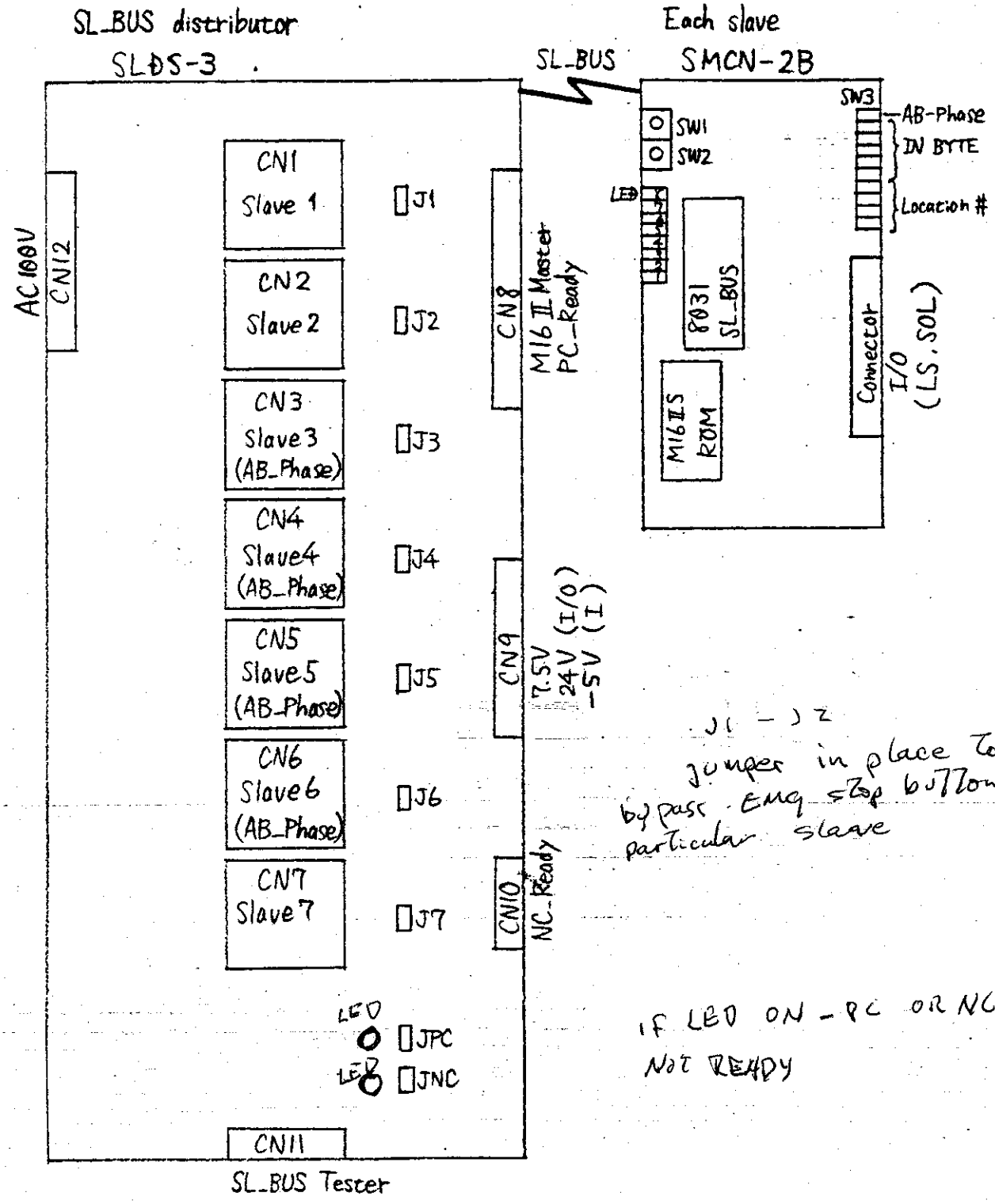
(2) AB-phase processing

(3) Control of DA-output of spindle-turn control

3 SLBUS control unit (8031 CPU)

(1) Execution of transfer-control function at SLBUS

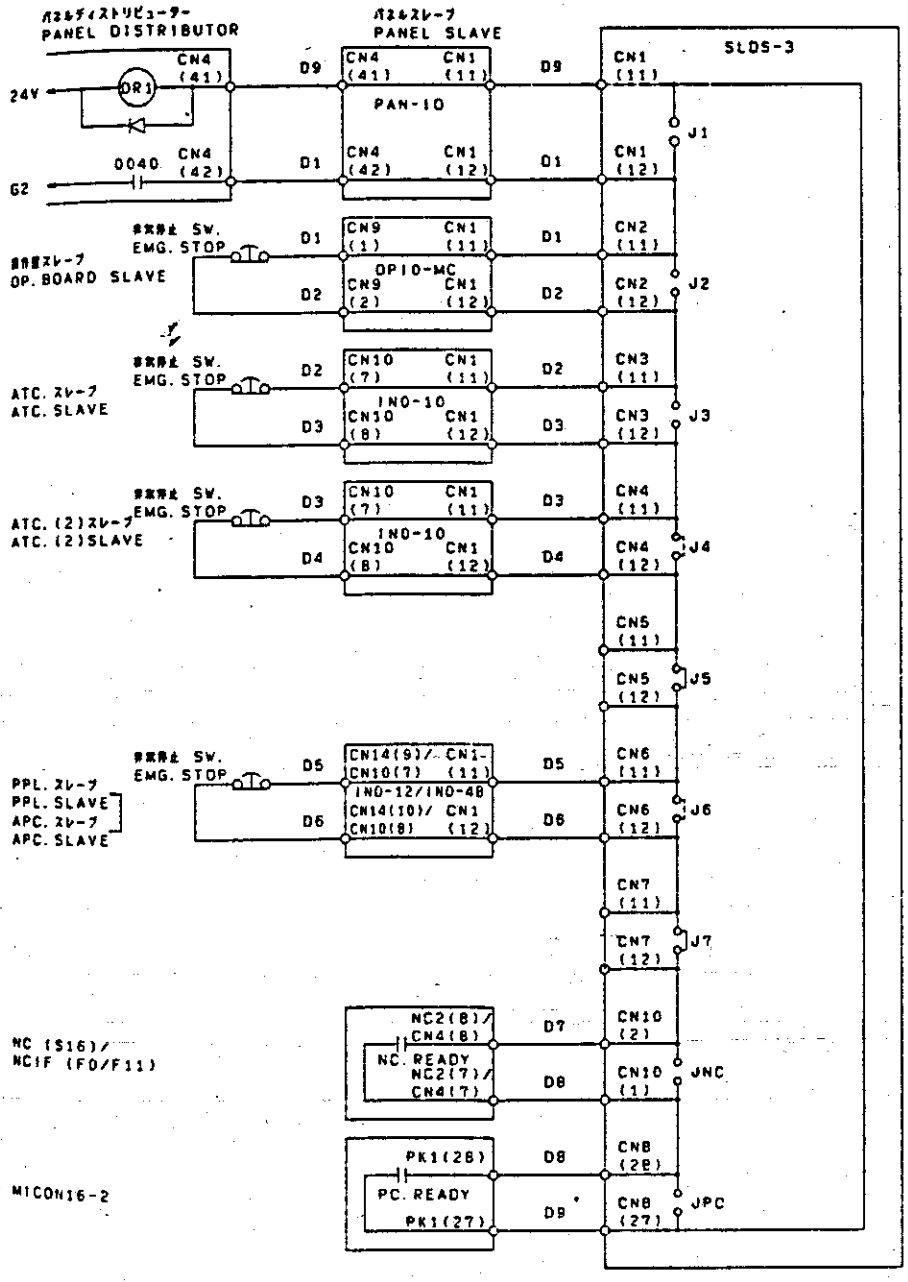
(6-3) Slave construction



J1 - J2 jumper in place to bypass Emg Stop button for particular slave

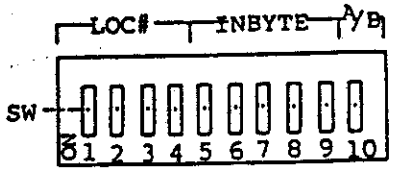
IF LED ON - PC OR NC Not READY

〈 Example 〉 SL-BUS Distributor from VM40.



(6-4) Slave switches

Setting of location No. AB-phase and input-points



Setting of Location No.

	SW1	SW2	SW3	SW4
1.	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	Subscript by key board			

Setting AB-phase (standard slave alone)

AB-phase	SW10
present	ON
none	OFF

Setting of input points

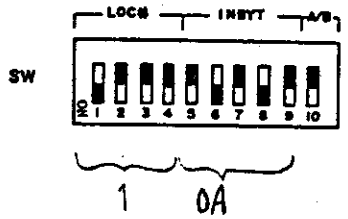
Input points (byte)	SW5	SW6	SW7	SW8	SW9
0	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF
4	OFF	OFF	ON	OFF	OFF
5	ON	OFF	ON	OFF	OFF
6	OFF	ON	ON	OFF	OFF
7	ON	ON	ON	OFF	OFF
8	OFF	OFF	OFF	ON	OFF
9	ON	OFF	OFF	ON	OFF
10	OFF	ON	OFF	ON	OFF
11	ON	ON	OFF	ON	OFF
12	OFF	OFF	ON	ON	OFF
13	ON	OFF	ON	ON	OFF
14	OFF	ON	ON	ON	OFF
15	ON	ON	ON	ON	OFF
16	OFF	OFF	OFF	OFF	ON
17	ON	OFF	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON
19	ON	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON
21	ON	OFF	ON	OFF	ON
22	OFF	ON	ON	OFF	ON
23	ON	ON	ON	OFF	ON
24	OFF	OFF	OFF	ON	ON
25	ON	OFF	OFF	ON	ON
26	OFF	ON	OFF	ON	ON
27	ON	ON	OFF	ON	ON
28	OFF	OFF	ON	ON	ON
29	ON	OFF	ON	ON	ON
30	OFF	ON	ON	ON	ON

(Example for SLBUS table setting)

On the SLBUS DATA SET screen.

POLNO.	LOC#	INBYT	OUTBYT	HIINBYT	HIOUTBYT	INADRS	OUTADRS	A/B#
1	01	0A	07	00	00	C03C	C000	00
2	02	03	02	00	00	C048	C00A	05
3	04	10	10	00	00	C068	C02C	06
4	FF	FF	FF	FF	FF	FFFF	FFFF	FF

POLNO. 1 (On the slave P.C.B.)



(INBYT=0A) Real Address	Input Relay NO.	Digital SW for LED	(OUTBYT=07) Real Address	Output Relay NO.	Digital SW for LED
C03C	060X	00	C000	000X	40
C03D	061X	01	C001	001X	41
C03E	062X	02	C002	002X	42
C03F	063X	03	C003	003X	43
C040	064X	04	C004	004X	44
C041	065X	05	C005	005X	45
C042	066X	06	C006	006X	46
C043	067X	07			
C044	068X	08			
C045	069X	09			

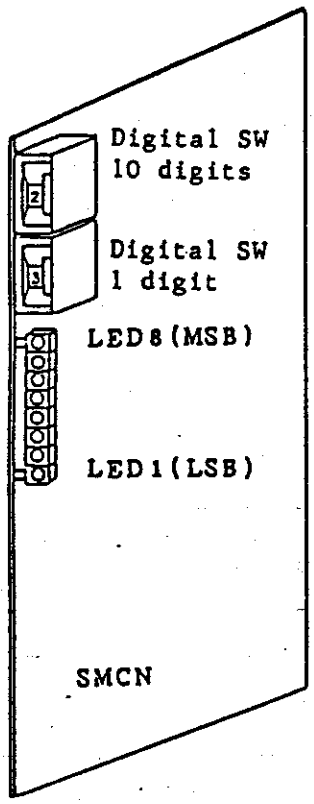
Look P13-1

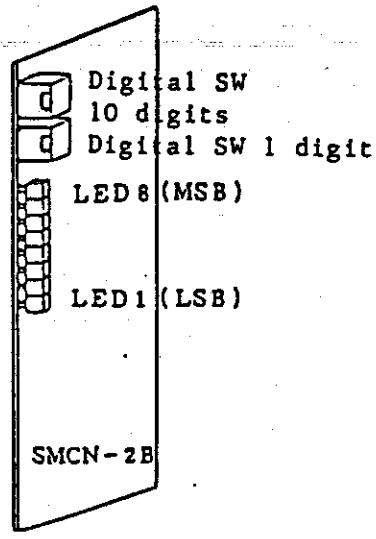
(Note) X: 0~7

(6-5) Monitor function of I/O slave

I/O slave transfer-control (SMCN-2B or SMCN) is provided with 8 LEDs and 2-digital SW. By using them, monitor can be made for operating state of I/O slave, input/output data and setting data.

Fig. shows the corresponding between the setting of digital SW and monitor-contents.



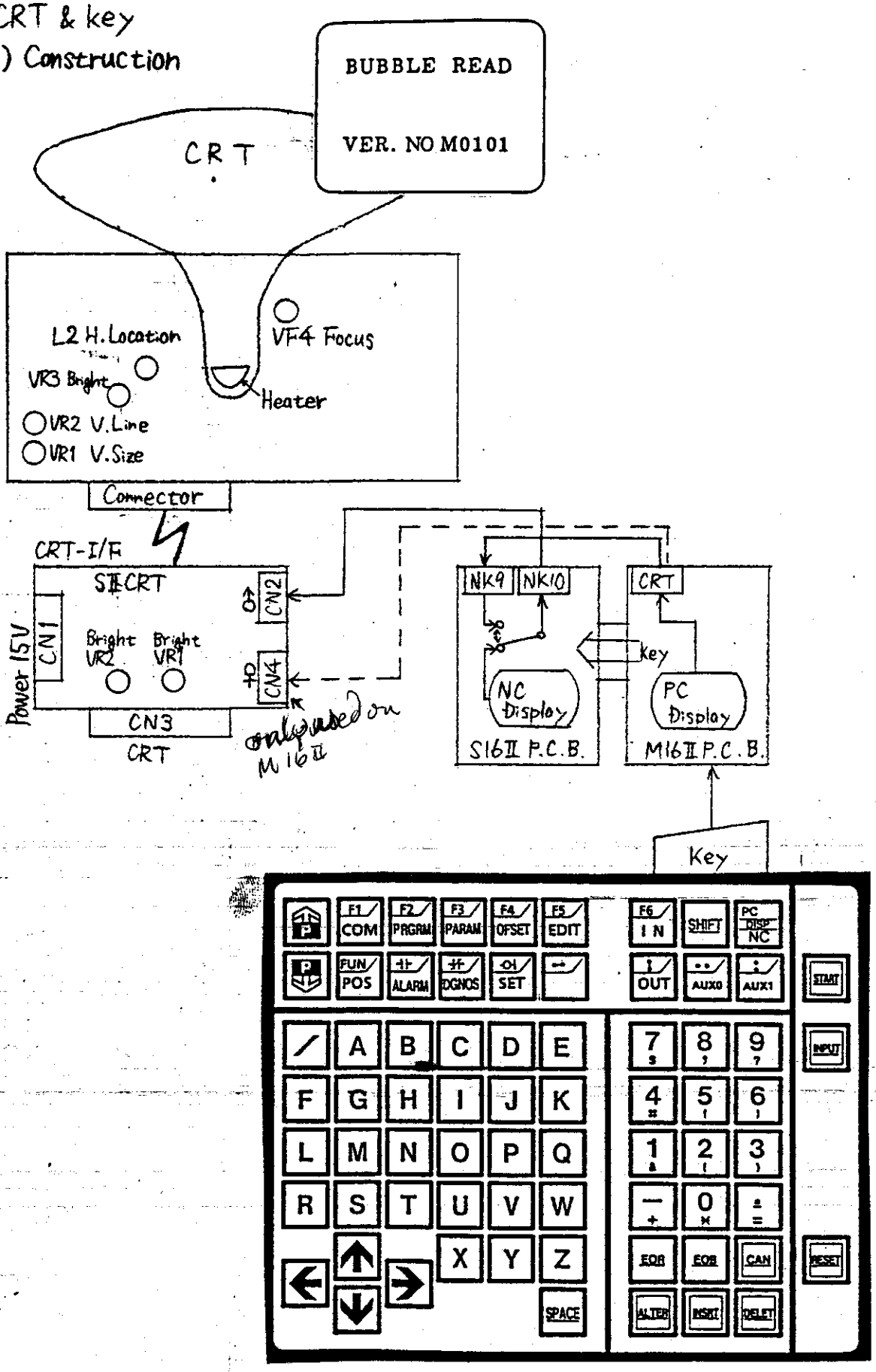


Digital SW	Display-contents
00 ~ 35	Input data of address corresponding to the set No.
36	Location No. (binary display)
38	Setting value of input-data byte number (binary display)
40 ~ 75	Output data of address corresponding to the set No. (binary display)
80	Output data-byte number of level-1 (binary display)
* 90	Max. value of AB-phase ring counter (LOW-byte)
* 91	Max. value of AB-phase ring counter (HIGH-byte)
* 92	Present value of AB-phase ring counter (LOW-byte)
* 93	Presnet value of AB-phase ring counter (HIGH-byte) (LED1~LED4) State of AB-phase A...LED7 B...LED8
* 94	Count-setting position A...LED7 B...LED8
97	Receiving error count number (binary display)
98	Power ON display (LED8) Flickering at every 16 times of poling (LED7). Counter with increment in case of no poling at the interval 50mS from master. (LED1~LED6)

* Function with SMCN-2B alone.

(7) CRT & key

(7-1) Construction



(7-2) CRT adjustment

Volume	Name	Content	Note
VR1	V.SIZE	Vertical size adjustment	CRT-P.C.B.
VR2	VLIN	Vertical lineal adjustment	
VR3	BRT	Bright	
VR4	FOCUS	Focus	
L2		Horizontal location adjustment	
L4		Not used	
VR1		Low bright (Ladder screen) adjustment	CRT-I/F
VR2		Bright	

If no display on the CRT screen,

Check i) The heater on the tube is red or not.

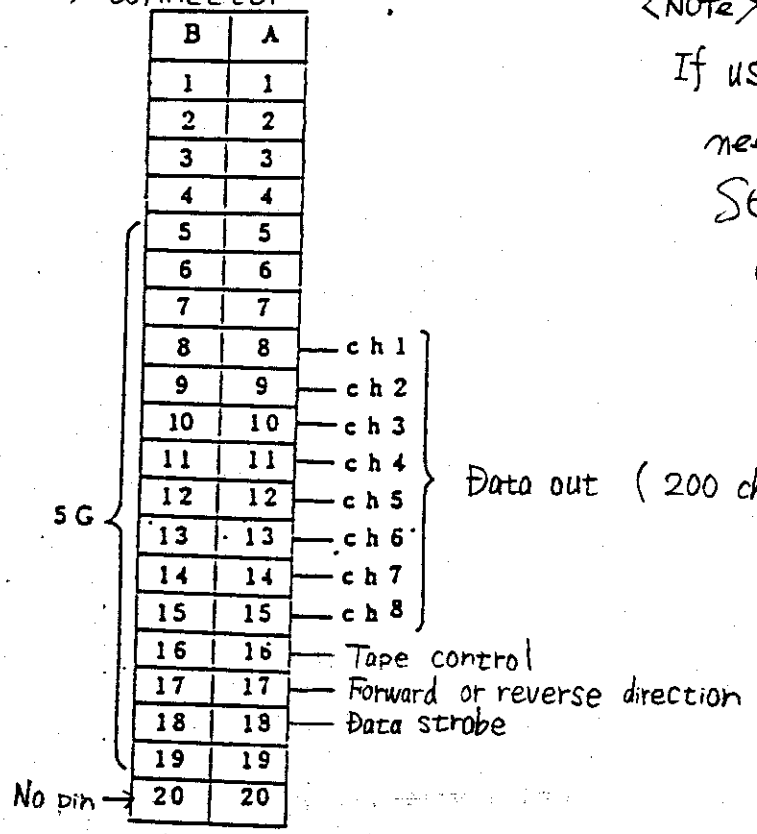
ii) Signal cable (CN2 or CN4).

iii) Power supply (CN1)

(Note) The initial screen of M16Ⅱ(PC) is blank.

(8) Tape reader (Parallel)

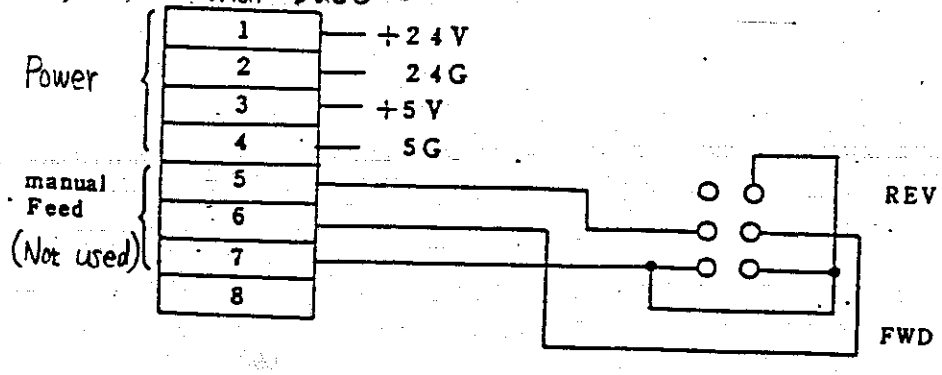
(8-1) Connector



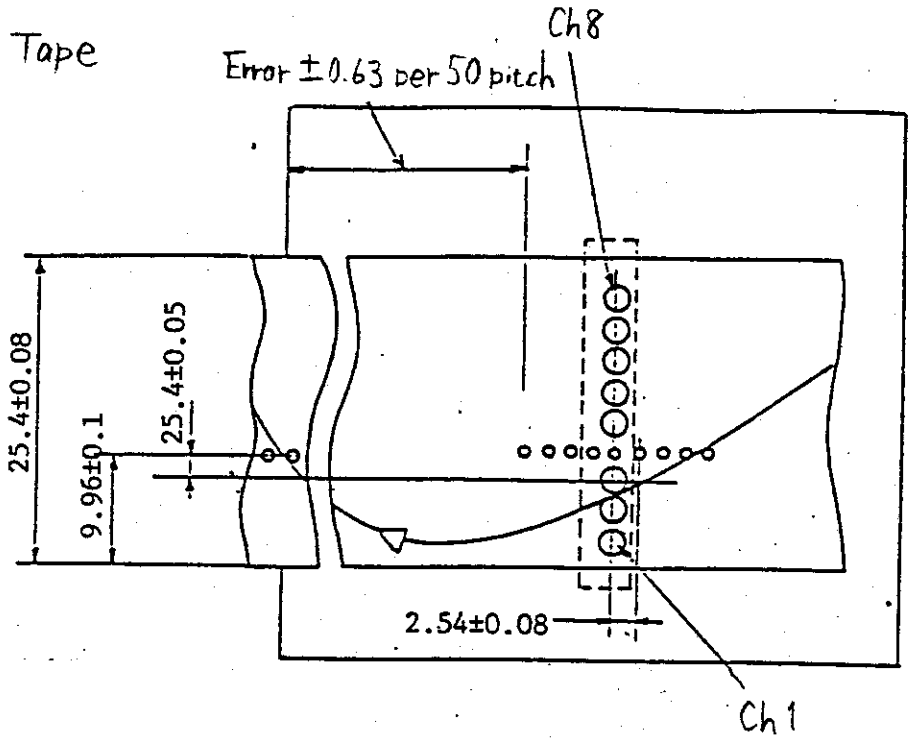
<Note>

If using Tape reader (Parallel Type),
need to set the parameter No.001 bit 4.
Set to 1 for external reader
" " 0 " internal "

(8-2) Terminal base



(8-3) Tape



(metric)

These 8 bits signals (Ch1~ Ch8) are recognized by ISO or EIA code.

(8-4) Tape code used for programming

ISO code										EIA code									Meaning	
Character	8	7	6	5	4		3	2	1	Character	8	7	6	5	4		3	2	1		
0			○	○		∘				0			○			∘				Numeral 0	
1	○		○	○		∘			○	1						∘			○	〃 1	
2	○		○	○		∘		○		2						∘		○		〃 2	
3			○	○		∘		○	○	3				○		∘		○	○	〃 3	
4	○		○	○		∘	○			4						∘	○			〃 4	
5			○	○		∘	○		○	5				○		∘	○		○	〃 5	
6			○	○		∘	○	○		6				○		∘	○	○		〃 6	
7	○		○	○		∘	○	○	○	7						∘	○	○	○	〃 7	
8	○		○	○	○	∘				8					○	∘				〃 8	
9			○	○	○	∘			○	9				○	○	∘		-	○	〃 9	
A		○				∘			○	a		○	○			∘			○	Address A	
B		○				∘		○		b		○	○			∘		○		〃 B	
C	○	○				∘		○	○	c		○	○	○		∘		○	○	〃 C	
D		○				∘	○			d		○	○			∘	○			〃 D	
E	○	○				∘	○		○	e		○	○	○		∘	○		○	〃 E	?
F	○	○				∘	○	○		f		○	○	○		∘	○	○		〃 F	
G		○				∘	○	○	○	g			○	○		∘	○	○	○	〃 G	
H		○			○	∘				h		○	○		○	∘				〃 H	
I	○	○			○	∘			○	i		○	○	○	○	∘			○	〃 I	
J	○	○			○	∘		○		j		○		○		∘			○	〃 J	
K		○			○	∘		○	○	k		○		○		∘		○		〃 K	
L	○	○			○	∘	○			l		○				∘		○	○	〃 L	
M		○			○	∘	○		○	m		○		○		∘	○			〃 M	
N		○			○	∘	○	○		n		○				∘	○		○	〃 N	
O	○	○			○	∘	○	○	○	o		○				∘	○	○		Not used at significant data zone in ISO code. Assumed as address 0 at EIA code.	
P		○		○		∘				p		○		○		∘	○	○	○	Address P	
Q	○	○		○		∘			○	q		○		○	○	∘				〃 Q	
R	○	○		○		∘		○		r		○			○	∘			○	〃 R	
S		○		○		∘		○	○	s			○	○		∘		○		〃 S	
T	○	○		○		∘	○			t			○			∘		○	○	〃 T	
U		○		○		∘	○		○	u			○	○		∘	○			〃 U	
V		○		○		∘	○	○		v			○			∘	○		○	〃 V	
W	○	○		○		∘	○	○	○	w			○			∘	○	○		〃 W	
X	○	○		○	○	∘				x			○	○		∘	○	○	○	〃 X	
Y		○		○	○	∘			○	y			○	○	○	∘				〃 Y	
Z		○		○	○	∘		○		z			○		○	∘			○	〃 Z	
DEL	○	○	○	○	○	∘	○	○	○	Del		○	○	○	○	∘	○	○	○	*	Delete (cancel erroneous hole)
NUL						∘				Blank						∘				*	No holes. Not ased at significant data data zone in EIA code.
BS	○				○	∘				BS			○		○	∘		○		*	Back space
HT					○	∘			○	Tab			○	○	○	∘	○	○		*	Tabulator
LF or NL					○	∘		○		CR or EOB	○					∘					End of block
CR	○				○	∘	○		○											*	Carriage return
SP	○		○			∘				SP				○		∘				*	Space
%	○		○			∘	○		○	ER					○	∘		○	○		Absolute rewind stop
(			○		○	∘				(2-4-5)				○	○	∘		○			Control out (start of comment)
)	○		○		○	∘			○	(2-4-7)		○			○	∘		○			Control in (end of comment)
+			○		○	∘		○	○	+		○	○	○		∘				*	Plus sign
−			○		○	∘	○		○	−		○				∘				—	Minus sign
:			○	○	○	∘		○													Assumed as program number in ISO code.
/	○		○		○	∘	○	○	○	/			○	○		∘			○		Optional block skip
.			○		○	∘	○	○		.		○	○		○	∘		○	○		Decimal point
#	○		○			∘		○	○											*	Sharp
$			○			∘	○													*	Dollar symbol
&	○		○			∘	○	○		&					○	∘	○	○		*	Ampersand
'			○			∘	○	○	○											*	Apostrophe
*	○		○		○	∘		○												*	Asterisk
,	○		○		○	∘	○			,			○	○	○	∘		○	○	*	Comma
;	○		○	○	○	∘		○	○											*	Semicolon
<			○	○	○	∘	○													*	Left angle bracket
=	○		○	○	○	∘	○		○											*	Equal mark
>	○		○	○	○	∘	○	○												*	Right angle bracket
?			○	○	○	∘	○	○	○											*	Question mark
@	○	○				∘														*	Commercial at mark
"			○			∘		○												*	Quotation mark

(9) NC/PC screens

(9-1) SEICOS-MII screens

Function	Chapter	Display screen
COM	1	COMMAND BLOCK, NEXT BLOCK, QUEUED BLOCK, PROGRAM NESTING
	2	PROGRAM RESTART
POS	1	ACTUAL POSITION, ABSOLUTE, RELATIVE, SET POSITION
PRGRM	1	PROGRAM(MEM), PROGRAM(MDI), EDIT, PROGRAM(RMT)
	2	ALL USING PROGRAM
ALARM	1	ALARM MESSAGE, TIMER
PARAM	1	PARAMETER
DGNOS	1	DIAGNOSTIC
	2	MULTI STATUS
OFSET	1	OFFSET
	2	WORK OFFSET
SET	1	SETTING DATA
	2	MACRO VAL.
	3	SAFETY GUARD(TOOL)
	4	SAFETY GUARD(WORK)
	5	OVERRIDE MEMORY
	6	MENU SWITCH
	7	TOOL LIFE
EDIT	1	EDIT
	2	PATTERN CYCLE
IN	1	DATA IN
OUT	1	DATA OUT

<NOte>: Changing the display.

1. In the same chapter, Push the Page Key.
2. Among the deiffrent chapters, Push the Function Key.

(9-2) SEICOS-LII screens

Function	Chapter	Display screen
COM	1	COMMAND BLOCK, NEXT BLOCK, QUEUED BLOCK, PROGRAM NESTING
	2	PROGRAM RESTART
POS	1	ACTUAL POSITION, ABSOLUTE, RELATIVE, SET POSITION
PRGRM	1	PROGRAM(MEM), PROGRAM(MDI), EDIT, PROGRAM(RMT)
	2	ALL USING PROGRAM
ALARM	1	ALARM MESSAGE, TIMER
PARAM	1	PARAMETER
DGNOS	1	DIAGNOSTIC
	2	MULTI STATUS
OFSET	1	OFFSET(WEAR2)
	2	OFFSET(SET)
	3	OFFSET(WORK)
	4	OFFSET(WEAR1)
	5	OFFSET(WORK SHIFT)
SET	1	SETTING DATA
	2	MACRO VAL.
	3	INDEX POINT SET
	4	MEASURE
	5	TOOL LIFE
EDIT	1	EDIT
IN	1	DATA IN
OUT	1	DATA OUT

(9-3) COM Command screens (In case of LII. no Y display)

Command Block

```
COMMAND BLOCK:          O1234 N5678

        G98  X   123.000  T
G01          Y             M          3
G17  G54     Z             L
G90  G64     A             P
G22  G67     I             Q
             J             D
G21  G69     K             B
G40          R             H
G49          F       500   C
G80          S      1000

                      ABS BUF      RDY
```

Next Block

```
NEXT BLOCK:             O1234 N5678

 G01     X   123.000  T
         Y             M
         Z             L
         A             P
         I             Q
         J             D
         K             B
         R             H
         F       500   C          --
         S

                      ABS LSK      RDY
```

Queued Block

```
QUEUED BLOCK:           O1234 N5678

         X             T
         Y             M
         Z             L
         A             P
         I             Q
         J             D
         K             B
         R             H
         F             C
         S

                  [INC  [BUF  [IN
                  [ABS  [LSK  [ALM  RDY
```

2 NEXT BLOCK

Program Restart

```
PROGRAM RESTART         O1234 N5678

 (DESTINATION)      M0003  0005  0019
    X    300.000     0004  ****  ****
    Y    400.000     ****  ****  ****
    Z    500.000     ****  ****  ****
                     ****  ****  ****
                     ****  ****  ****
 (DISTANCE TO GO)    ****  ****  ****
    X    500.000     ****  ****  ****
    Y    200.000     ****  ****  ****
    Z    100.000

                  T        0010  0101
                  S        1000
Q                 B         270
```

(Option)

Program Nesting

```
PROGRAM NESTING  00300  N

 NEST  TYPE  CALL   START  LOOP

   1   SUB  00001  00100  0001
   2   SUB  00100  00200  0003
   3   SUB  00200  00300  0003

                      LSK      RDY
```

(9-4) POS Position screens (In case of LII, no Y display)

Actual Position

```
ACTUAL POSITION          O1234 N5678

   (ABSOLUTE)        (DISTANCE TO GO)

X      0.000        X      0.000
Y      0.000        Y      0.000
Z      0.000        Z      0.000

   (RELATIVE)          (MACHINE)

X      0.000        X      0.000
Y      0.000        Y      0.000
Z      0.000        Z      0.000
```

Relative

```
POSITION(RELATIVE)       O1234 N5678

X        100.000

Y        200.000

Z         50.000

                    ABS LSK        RDY
```

Absolute

```
POSITION(ABSOLUTE)       O1234 N5678

X        100.000

Y        200.000

Z         50.000

                    ABS LSK        RDY
```

Set Position

```
   SET POSITION          O1234 N5678

(SET POINT:1)     (DISTANCE TO GO)

X      0.000        X      0.000
Y      0.000        Y      0.000
Z      0.000        Z      0.000

(SET POINT:2)          (MACHINE)

X      0.000        X      0.000
Y      0.000        Y      0.000
Z      0.000        Z      0.000
```

(Option)

(9-5) PRGRM Program screens

All Using Program

```
ALL USING PROGRAM                    page 1

 0010    0020
 0100
 0120
 1000
 0510
 0210
 0300
 0051
 0062
 0777

 Available Program area    40[m]
 Available file count      39
O
```

Memory

```
PROGRAM (MEM)                O1234 N5678

O1234;
N0001 G01 X100.0 Z-1250 ;
 S1000 ;
 M03 ;
 M30 ;
 %

O
```

MDI

```
 PROGRAM (MDI)               O1234 N5678

N0001 G01 X100.0 Z-1250 ;
 S1000 ;
 M03 ;

O
```

Edit

```
EDIT                         O1234 N5678

O4444;
 N001 G00 X100.0 Z12.5 ;
  S400 M03 ;
 N002 G01 F500 X200.0 ;
  M30;
  %
```

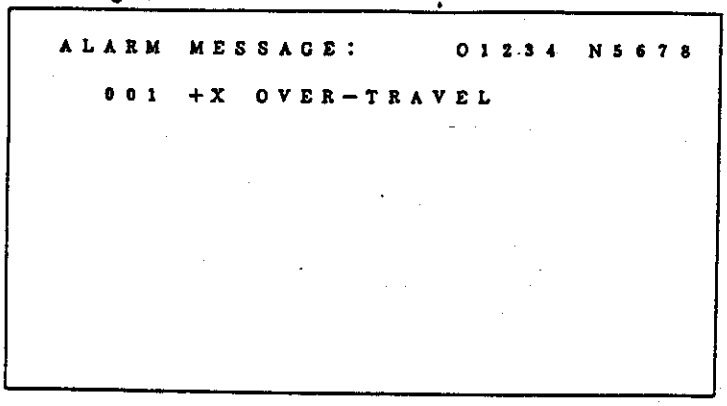
Remote

```
 PROGRAM    (RMT)      O1234 N
O1234 (TEST) ;
   G92 X0 Y0 2200. ;
   S1000 ;
   M03 ;
   G00 G90 X-0.968 Y-0.968 ;
   Z100. ;
   Z10. ;
   G01 Z0 F100 ;
   X-1.679 Y-1.681 Z-0.116 ;
   X-2.353 Y-2.357 Z-0.454 ;
   X-2.956 Y-2.963 Z-0.997 ;
   X-3.456 Y-3.467 Z-1.718 ;

O                        ABS LSK      RDY
```

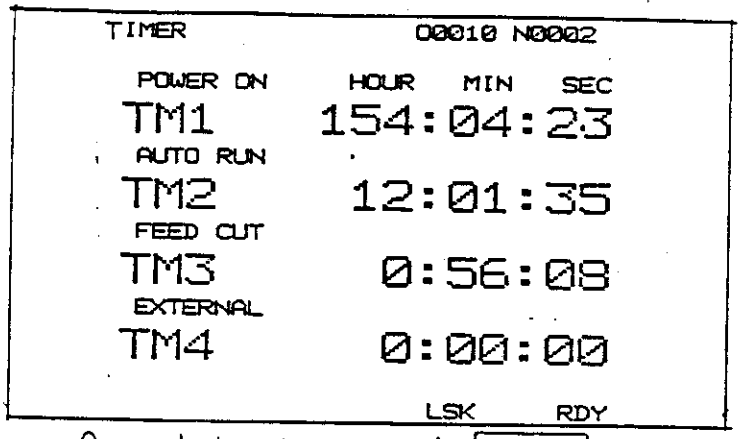
(Option)

(9-6) [ALARM] Alarm screens

Message

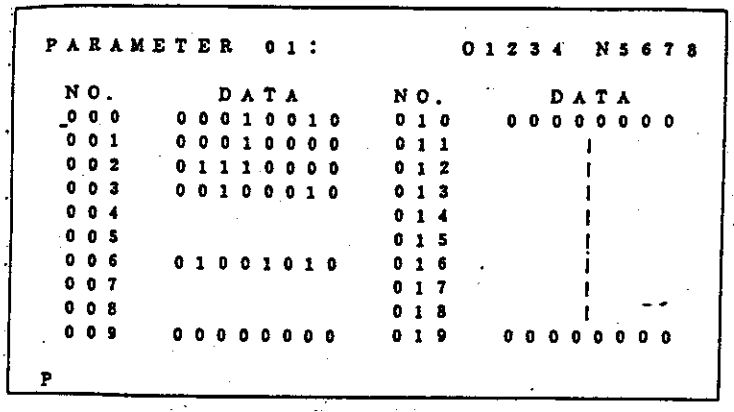


Timer



Cancel by 1~4 and [ORIGN]

(9-7) [PARAM] Parameter screen



Write enable by [MDI], Memory write key and Setting data (MEMORY OPEN).

(9-8) DGNOS Diagnose screens

Diagnose

```
DIAGNOSTIC 01:          O1234 N5678

NO.      DATA
XC       0.000      M    0000  MF      0
XE       0.000      S   00000  SF      0
YC       0.000      T    0000  TF      0
YE       0.000      B     000  BF      0
ZC       0.000      L    0000  DEN     0
ZE       0.000      DWELL(Sec)
                                0.000
                    F*S         0.0

                    (TOOL)
TC       0.000      WAIT              0
TE       0.000      SPINDLE           0
```

Multi Status

```
**************************
*  MULTI STATUS MENU     *
**************************

      1 JOG

      2 AUTO RUN

      3 HANDLE

      4 SPEED

      5 PUSH KEY

    SELECT PAGE 1
```

Select 1~5

Return by ORIGN

(9-9) OFSET Offset screens

Offset (MII only)

```
OFFSET 01:              O1234 N5678

  NO.        DATA       NO.        DATA

 001  -0000.000        009  -0000.000
 002         .         010         .
 003         .         011         .
 004         .         012         .
 005         .         013         .
 006         .         014         .
 007         .         015         .
 008         .         016         .

X-0000.000  Y-0000.000  Z-0000.000

P
```

Work Offset (MII only)

```
WORK OFFSET 01:         O1234 N5678

G54  X-0000.000    G56  X-0000.000
     Y         .         Y         .
     Z         .         Z         .
     R         .         R         .

G55  X         .
     Y         .    MACHINE POSITION
     Z         .         X-0000.000
     R         .         Y         .
                         Z         .

  SET P1
X
```

Wear 2 (LII only)

```
 OFFSET (WEAR2) :1   O1234 N5678

NO.        U              W
01    ±999.999    ±999.999
02
03
04
05
06
07
08

ACTUAL POSITION(ABSOLUTE)
 X±9999.999   Z±9999.999

 U                          ABS LSK ALM RDY
```

Set (LII only)

```
 OFFSET (SET) :1        O1234 N5678

NO.        X              Z              R          T
01  -1234.567-1234.567-1234.567  1
02
03
04
05
06
07
08

ACTUAL POSITION(ABSOLUTE)
 X±9999.999   Z±9999.999
 Q SETTER
 X                          ABS LSK ALM RDY
```

Work (LII only)

```
 OFFSET (WORK)          O1234 N5678

G54  X±9999.999     G57  X±9999.999
     Z±9999.999          Z±9999.999

G55  X±9999.999     G58  X±9999.999
     Z±9999.999          Z±9999.999

G56  X±9999.999     G59  X±9999.999
     Z±9999.999          Z±9999.999

WORK ZERO SHIFT
 X±9999.999
 Z±9999.999

 X                     ABS LSK       RDY
```

Wear 1 (LII only)

```
 OFFSET (WEAR1) :1   O1234 N5678

NO.        U              W              H
01    ±999.999    ±999.999    ±999.999
02
03
04
05
06
07
08

ACTUAL POSITION(ABSOLUTE)
 X±9999.999   Z±9999.999

 U                          ABS LSK ALM RDY
```

Work Shift (LII only)

```
 OFFSET(WORK SHIFT) O1234 N5678

          **WORK SHIFT**

     X ±9999.999   Z ±9999.999
                   Z SETTER

          **WORK LENG.**

                   K ±9999.999

ACTUAL POSITION(ABSOLUTE)
 X±9999.999   Z±9999.999

 Z                          ABS LSK ALM RDY
```

(9-10) SET Set screens

Setting Data

```
SETTING DATA 01:     O1234 N5678

X MIRROR IMAGE  =0( 0:OFF  1:ON)
Y MIRROR IMAGE  =0( 0:OFF  1:ON)
Z MIRROR IMAGE  =0( 0:OFF  1:ON)
4 MIRROR IMAGE  =0( 0:OFF  1:ON)
INPUT UNIT      =0( 0:MM   1:INCH)
PROGRAM DEVICE  =0( 0:MEM  1:RMT)
PUNCH CODE      =0( 0:EIA  1:ISO)
TV CHECK        =0( 0:OFF  1:ON)
TAB PUNCH       =0( 0:OFF  1:ON)
SPACE PUNCH     =0( 0:OFF  1:ON)
MEMORY OPEN     =0( 0:OFF  1:ON)

P                                RDY
```

Macro Value

```
MACRO VAL. 01:          O1234 N5678

 NO.      DATA       NO.      DATA
 001  -0000.0000     011  -0000.0000
 002  -1.0000.0022   012
 003  -              013
 004  -              014
 005  -              015
 006  -              016
 007  -              017
 008  -              018
 009  -              019
 010  -              020

P
```

Over Ride Memory (MII only)

```
OVER RIDE MEMORY    O1234 N6789
          02345 :1

TOOL   FEED-RATE    SPINDLE-SPEED
 NO.   COM.  OVR%     COM.  OVR%

0001  10000   100    12000    90
0002    300   110      500   110

P                ABS BUF        RDY
```

Menu Switch (MII only)

```
MENU SWITCH 01:      O1234 N5678

MODE =0  (0:EDIT     1:MEM  2:MDI
          3:HANDLE   4:JOG  5:RAPID
          6:ZRN)
HANDLE AXIS  =0    0:HX 1:HY 2:HZ
HANDLE MULT  =100    (*1  *10  *100)
RAPID  OVRD  =  50%  (0  1  25  100%)
JOG FEED     =00000MM/MIN
            **********************
FEED OVRD    =100%
            **********************

P
```

Safety Guard (Tool) <MII only>

```
SAFETY GUARD(TOOL)  O1234 N5678

 NO.     H        TOOL
                MEASURE     POSITION
 001   0001       0.000   (MACHINE)
 002                  .   X    10.000
 003                  .   Y   -20.000
 004                      Z   -30.000
 005
 006
 007
 008
 009
 010

P
```

Safety Guard (Work) <MII only>

```
SAFETY GUARD(WORK)01:      O1234

TOOL      MEASURE          (COMMAND)
 NO.        Z
0000       0.000      X       0.000
                      Y       0.000
                      Z       0.000
```

Tool Life

```
TOOL LIFE :1                    O1234 N5678
NC PRO.   PRI.  SPARE     PRI.  SPARE
T0101      P    T0202      P    T0303
T0808      P    T0909      P    T1010
T                          ABS LSK ALM RDY
```

Index Point Set (LⅡ only)

```
INDEX POINT SET                 O1234 N5678
        INDEX POINT (G30)
          P1(X) ±9999.999
          P2(Z) ±9999.999
ACTUAL POSITION(MACHINE)
 X±9999.999   Z±9999.999
X                          ABS LSK ALM RDY
```

Measure (Tool) <LⅡ only>

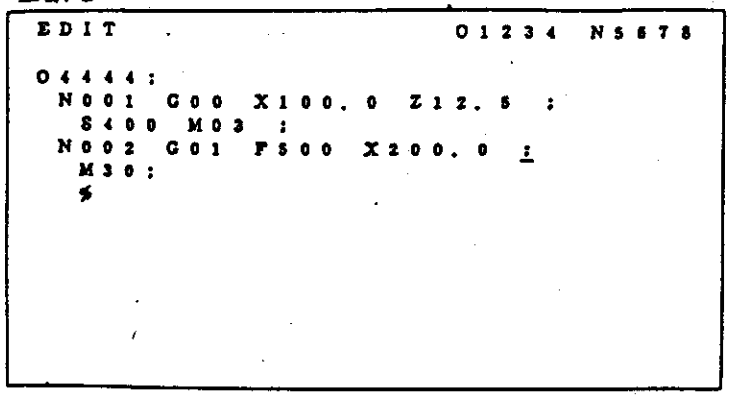
```
MEASURE (TOOL)
   OUT
        TOOL   AXIS  MAS.L.  READ BANK
   N01
   N02
   N03
   N04
   IN
        TOOL   AXIS  MAS.L.  READ BANK
   N01
   N02
   N03
   N04
```

Measure (Set 1) <LⅡ only>

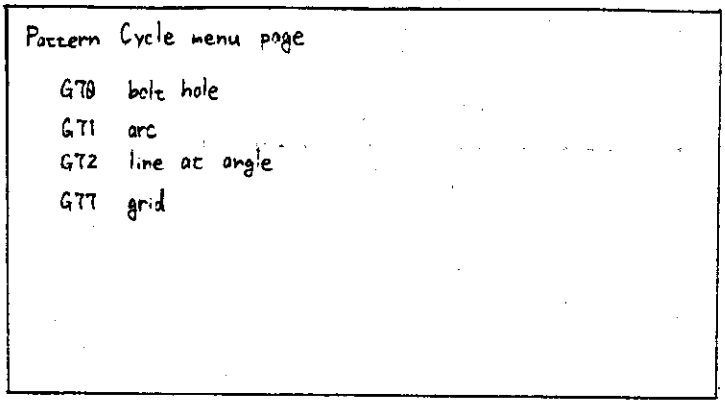
```
MEASURE (SET1)
 M.OFFSET      M.REPEAT      M.PANK
 +NG  0        ++NG  0       ++NG  0
 +OK  0        +NG   0       +NG   0
 -OK  0        +OK   0       +OK   0
 -NG  0        -OK   0       -OK   0
               -NG   0       -NG   0
               --NG  0       --NG  0

 M.PASS
   0
                                LSK
```

(9-11) [EDIT] Edit screens

Edit

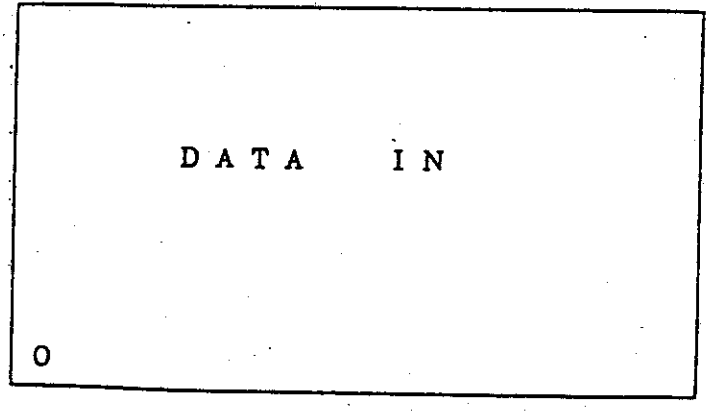


Pattern Cycle (MII only)



(9-12) [IN] In screen

Data In

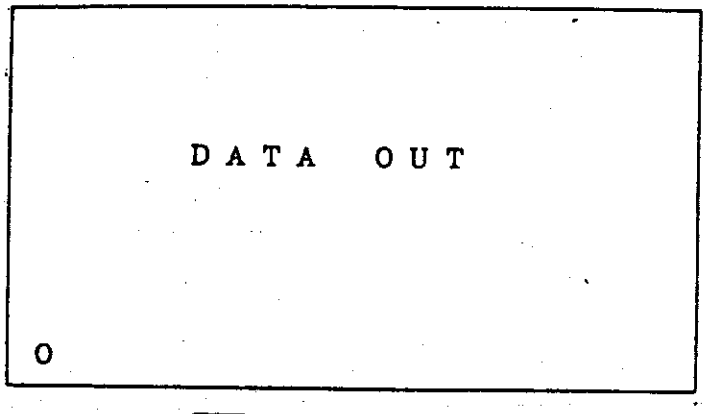


O XXX X [INP]	program
[P] [A] [INP]	parameter
[W] [O] [INP]	work offset
[T] [O] [INP]	tool offset
O [D] [F] [INP]	program area clear

(Note) Never use the ODF function, normally.

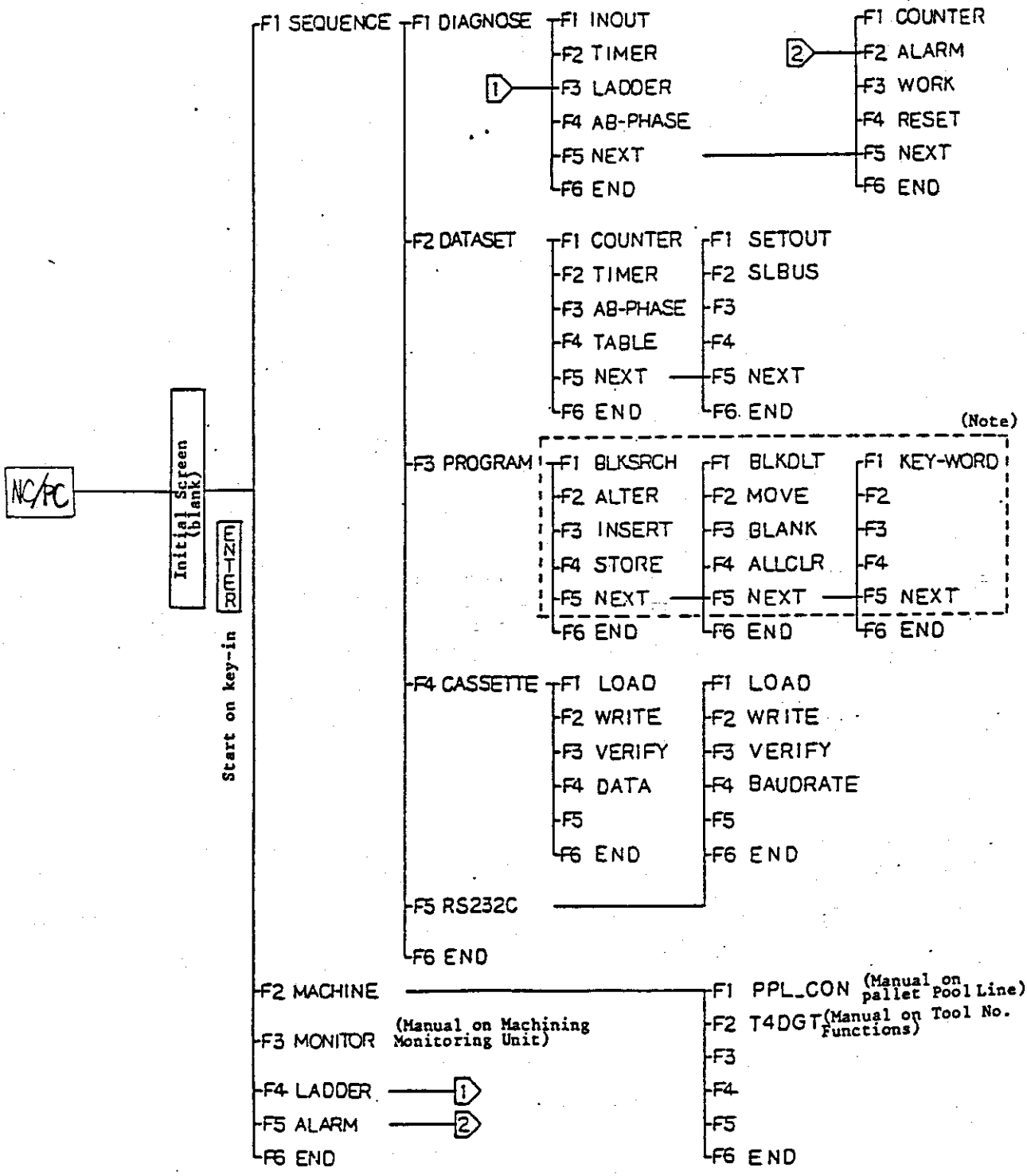
(9-13) [OUT] Out screen

Data Out

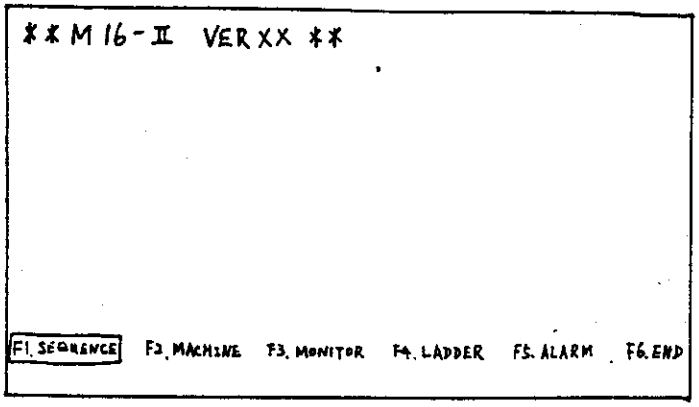


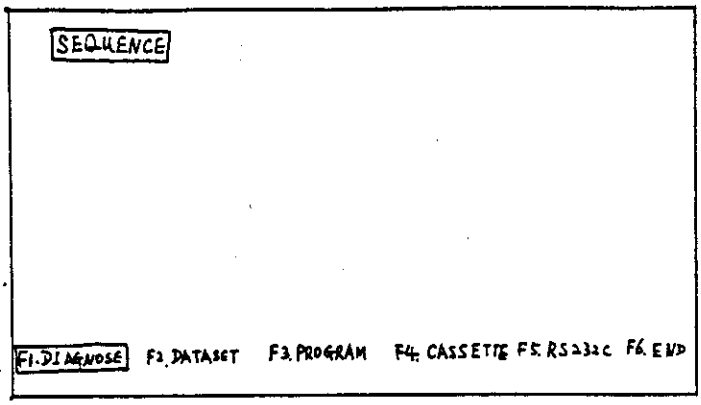
O XXX X [INP]	program
[P] [A] [INP]	parameter
[W] [O] [INP]	work offset
[T] [O] [INP]	tool offset

(9-14) SEQUENCER (M16Ⅱ) screens



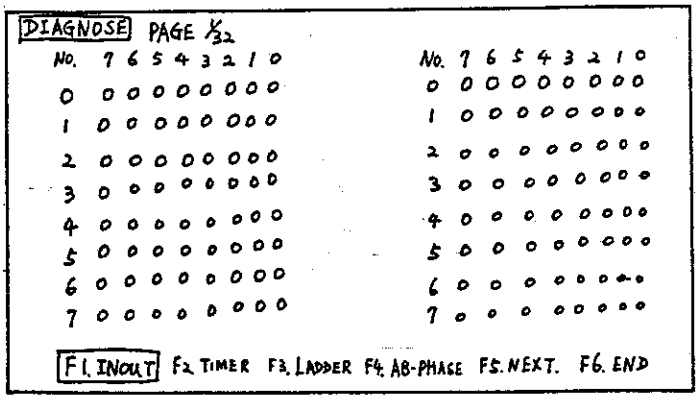
(9-15) SEQUENCE mode



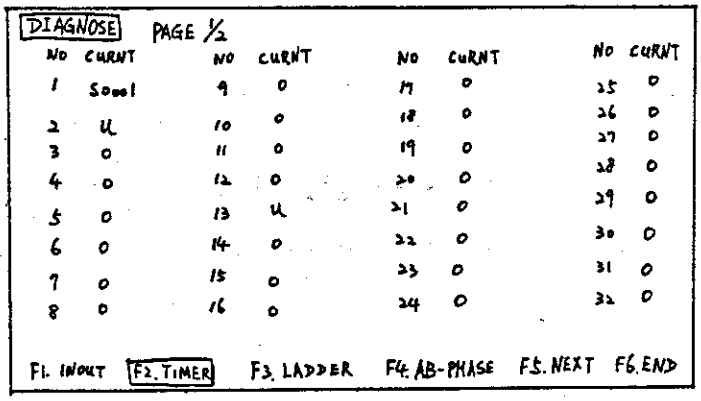


(9-16) DIAGNOSE mode

INOUT



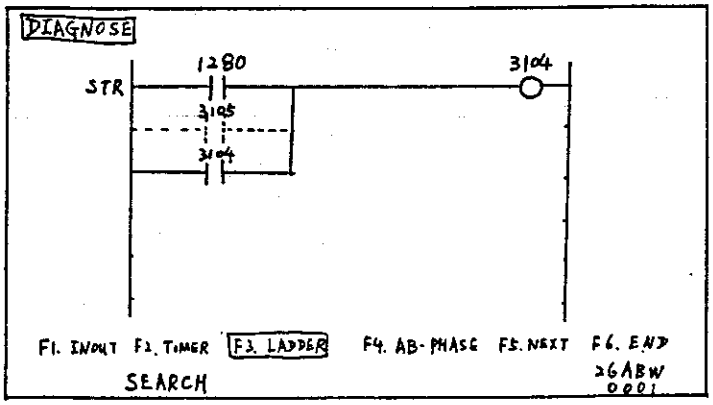
TIMER



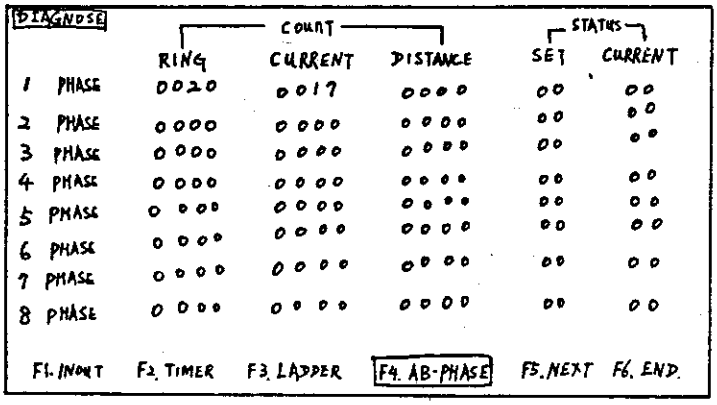
Rewrite by MANUAL INPUT

[Caution] Press emergency stop!

LADDER



AB-PHASE



COUNTER

DIAGNOSE PAGE 1/2

NO	CURNT	NO	CURNT	NO	CURNT	NO	CURNT
1	0011	9	0000	17	0000	25	0000
2	0018	10	0000	18	0000	26	0000
3	0033	11	0000	19	0000	27	0000
4	0033	12	0000	20	0000	28	0000
5	0000	13	0000	21	0000	29	0000
6	0000	14	0000	22	0000	30	0000
7	0000	15	0000	23	0000	31	0000
8	0000	16	0000	24	0000	32	0000

F1. COUNTER F2. ALARM F3. WORK F4. RESET F5. NEXT F6. END

ALARM

DIAGNOSE

ALARM MESSAGE

F1. COUNTER F2. ALARM F3. WORK F4. RESET F5. NEXT F6. END

WORK

DIAGNOSE

000	00	008	00	010	00	018	00
001	00	009	00	011	00	019	00
002	00	00A	00	012	00	01A	00
003	00	00B	00	013	00	01B	00
004	00	00C	00	014	00	01C	00
005	00	00D	00	015	00	01D	00
006	00	00E	00	016	00	01E	00
007	00	00F	00	017	00	01F	00

F1. COUNTER F2. ALARM F3. WORK F4. RESET F5. NEXT F6. END

Check $C000_{(H)} \sim CFFF_{(H)}$

RESET

DIAGNOSE

BATTERY ALARM RESET

F1. COUNTER F2. ALARM F3. WORK F4. RESET F5. NEXT F6. END

R S INPUT → Reset

(9-17) DATASET mode

COUNTER

DATASET PAGE 1/2

NO	PRESET	CURNT	NO	PRESET	CURNT	NO	PRESET	CURNT	NO	PRESET	CURNT
1	0000	0000	9	0000	0000	17	0000	0000	25	0000	0000
2			10			18			26		
3			11			19			27		
4			12			20			28		
5			13			21			29		
6			14			22			30		
7			15			23			31		
8			16			24			32		

F1 COUNTER F2 TIMER F3 AB_PHASE F4 TABLE F5 NEXT F6 END

TIMER

DATASET PAGE 1/2

NO	M/S	TIMER	NO	M/S	TIMER	NO	M/S	TIMER	NO	M/S	TIMER
1	M	0001	9	M	0000	17	M	0000	25	M	0000
2	M	0100	10	S		18			26	M	
3	S	0055	11			19			27		
4	S	0000	12			20			28		
5	M	0110	13			21			29		
6	S	0010	14			22			30		
7	S	0850	15			23			31		
8	M	1000	16			24			32		

F1 COUNTER F2 TIMER F3 AB_PHASE F4 TABLE F5 NEXT F6 END

A INPUT → All clear

AB-PHASE

DATASET

	RING COUNTER	CURRENT COUNTER	MULTIPLIER	STATUS
1 PHASE	0000	0000	0000	00
2 PHASE				
3 PHASE				
4 PHASE				
5 PHASE				
6 PHASE				
7 PHASE				
8 PHASE				

F1 COUNTER F2 TIMER F3 AB-PHASE F4 TABLE F5 NEXT F6 END

RING COUNTER (Maximum count)
CURRENT COUNTER (Wait position pot)
MULTIPLIER (Normally 1)
STATUS (Normally 0)

A INPUT → All clear

TABLE (CONSTANT)

DATASET CONSTANT BYTE TABLE 1/2

1	00	9	00	17	00	25	00	33	00	41	00	49	00	57	00
2	00	10	00	18	00	26	00	34	00	42	00	50	00	58	00
3	00	11	00	19	00	27	00	35	00	43	00	51	00	59	00
4	00	12	00	20	00	28	00	36	00	44	00	52	00	60	00
5	00	13	00	21	00	29	00	37	00	45	00	53	00	61	00
6	00	14	00	22	00	30	00	38	00	46	00	54	00	62	00
7	00	15	00	23	00	31	00	39	00	47	00	55	00	63	00
8	00	16	00	24	00	32	00	40	00	48	00	56	00	64	00

F1. COUNTER F2. TIMER F3. AB-PHASE F4. TABLE F5. NEXT. F6. END

A INPUT → All clear

TABLE (PARAMETER)

DATASET PARAMETER

1	00000000	9	0 0000000
2	00000000	10	0 000 0000
3	00000000	11	00 00 0000
4	0 0000000	12	0 0000000
5	00000000	13	01111111
6	01000000	14	0 000 0000
7	00000000	15	00 000000
8	100/0000	16	00 00 0000

F1. COUNTER F2. TIMER F3. AB-PHASE F4. TABLE F5. NEXT F6. END

A INPUT → All clear

SETOUT

DATA SET

Look Adress OUT DATA SET DATA

F1. SETOUT F2. SLBUS F3. F4. F5. NEXT F6. END

SL-BUS

DATA SET SLBUS DATA SET (HEX) ½ ALL CLEAR "A"

PoLNo	Loc #	INBYT	OUTBYT	HIINBYT	HIOUTBYT	INADRS	OUTADRS	A/B#
1	01	0C	09	02	00	C03C	C000	00
2	02	10	10	00	00	C068	C02C	00
3	03	03	03	00	00	C04B	C00C	00
4	00	03	03	00	00	C056	C015	00
5	00	02	01	00	00	D391	D390	00
6	00	03	02	00	00	C050	C010	00
7	00	06	06	00	00	C05C	C01A	00
8	FF	FF	FF	FF	FF	FFFF	FFFF	FF

F1. SETOUT F2. SLBUS F3. F4. F5. NEXT. F6. END

Coil 4000 ~ 4077 output

(9-18) PROGRAM mode

SEQUENCE WRITE ENABLE SW ON!

F1 BLKSRCH F2 ALTER F3 INSERT F4 STORE F5 NEXT F6 END

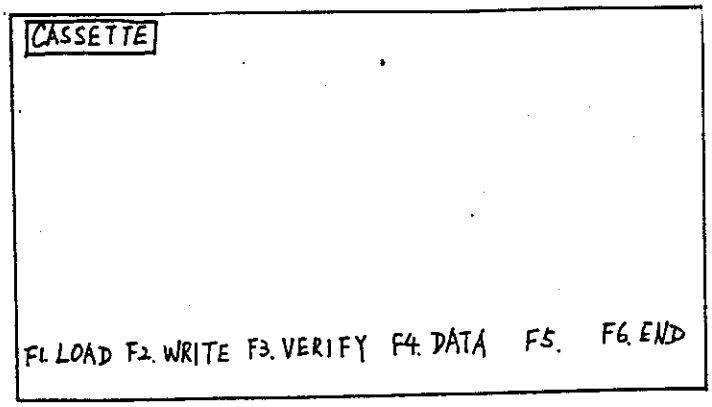
Sum Check error

Select F2 Press input

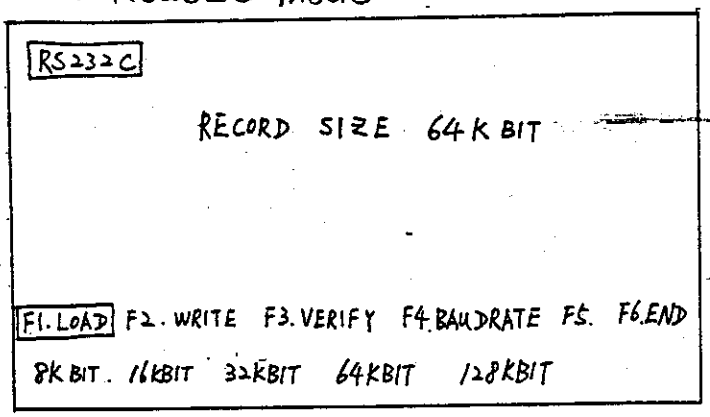
~~Enter Password~~

~~Select~~ end " "

(9-19) CASSETTE mode



(9-20) RS232C mode



(10) NC/PC alarms

(10-1) SEICOS-MII alarms

Alarm NO.	Message	Description	Management
001	+X OVER TRAVEL	OT switch has been stepped on.	◦ Correct the program. ◦ Move axis to the safe side.
002	−X 〃		
003	+Y 〃		
004	−Y 〃		
005	+Z 〃		
006	−Z 〃		
007	+4 〃		
008	−4 〃		
009	+5 〃		
010	−5 〃		
011	X SERVO ALARM	The motor had a large error.	◦ Check the feedback and power lines. ◦ Check the brush contact. ◦ Check the voltage. ◦ Replace the P.C.B. (Servo I/F) ◦ Check the parameter.
012	Y 〃		
013	Z 〃		
014	4 〃		
015	5 〃		
016	B 〃		
017	X SERVO UNIT ALARM	Alarm in the servo amplifier.	◦ Check the alarm LEDs. ◦ Check the input signals. ◦ Check the fuses. ◦ Check the voltage. ◦ Check the motor and T.G. ◦ Replace the amplifier unit.
018	Y 〃		
019	Z 〃		
020	4 〃		
021	5 〃		
022	B 〃		
023	X NON FEED BACK	The motor feedback has been broken.	◦ Check the feedback lines. ◦ Check the P.G. or Magnescale, Heidenhein.
024	Y 〃		
025	Z 〃		
026	4 〃		

Alarm NO.	Message	Description	Management
027 028	5 NON FEED BACK B 〃	Ditto	Ditto
029			
030	DIP SW SET	Dip switch set error on the S16Ⅱ P.C.B..	◦ Check the dip switches on the S16Ⅱ P.C.B..
031	WATCHDOG ALARM	NC control software cannot work.	◦ Check the S16Ⅱ P.C.B.. ◦ Check the voltage on the P.C.B..
032	MACHINE ALARM	Machine alarms from the sequencer.	◦ See the screen of the sequencer and check.
033	BATTERY ALARM	An abnormality in the battery.	◦ Check the battery.
034 035 036 037 038 039	X GRID SIGNAL Y 〃 Z 〃 4 〃 5 〃 B 〃	The one turn signal isn't properly.	◦ Adjust the dogs of the zero return. ◦ Check the signal on the feedback lines.
040			
041	PROGRAM ERROR	Program error.	Check the values. ◦ maximum command ◦ negative number ◦ non existing G code ◦ macro in MDI ◦ macro errors ◦ B command (5 degrees method) ◦ Axial move command in MDI after program restart.
042	W SETTER (AXIS)	The operated axis is erroneous.	Move an axis at the some time.

Alarm No.	Message	Description	Management
043			
044			
045			
046			
047	S.GUARD TOOL SW	The tool length switch of the safety guard was changed.	• Check how to use.
048	OFFSET-C PROG.	[Tool diameter compensation] Program error.	• Check the program.
049	OFFSET-C INTF.	[Tool diameter compensation] Interference check error.	ditto
050	OFFSET-C ERROR	[Tool diameter compensation] No intersecting point.	ditto
051	DIVIDE ZERO	0 DIV interrupt.	ditto
052	NEG. SQUARE ROOT	Negative square root	ditto
053	UNDER FLOW	An under flow took place.	ditto
054	OVER FLOW	An over flow took place.	ditto
055			
056	FIX. PROG. ERROR	An error while executing a fixed cycle program.	ditto
057			
058	+X SOFT OT	The soft stroke limit.	• Check the program. • Move axis to the safe side.
059	−X "		
060	+Y "		
061	−Y "		
062	+Z "		
063	−Z "		

Alarm No.	Message	Description	Management
064	+4 SOFT OT	ditto	ditto
065	-4 "		
066	+5 "		
067	-5 "		
068	PROG. ERR (R)	Wrong radius R.	◦ Check the program.
069			
070			
071	CIRCLE ERROR	An end point can't be detected when specifying a circle.	ditto
072			
073			
074	FORMAT 1	Format error other than formula.	ditto
075	FORMAT 2	Format error of formula.	ditto
076	UNDEFIN #NO	No such variable.	ditto
077	#NO NOT LEFT	Variable doesn't represent the left side.	ditto
078	[ ] LIMIT	Multiplexity of parenthesis.	ditto
079	[ ] UNMATCH	Numerically illegal parenthesis.	ditto
080	MACRO & N/C	A macro and N/C statement have interacted.	ditto
081	GO TO ERROR	No GO TO branch address or subprogram is available.	ditto
082	DO END NO	DO END determination number error.	ditto
083	DO LIMIT	DO END multiplexity error.	ditto
084	DO FORMAT	DO END loops are crossed	ditto

Alarm No.	Message	Description	Management
085	BUFFER OUT	Memory are insufficient to process a macro.	◦ Check the memory capacity.
086			
087			
088			
089			
090	PARAM	Parameter data incomplete.	◦ Check the parameter.
091			
092			
093			
094			
095			
096			
097			
098			
099			
100	AXIS DATA OVER	Move command is too large.	◦ Check the program.
101	CONTROL LSI ERR	Interpolator is not ready.	◦ Check the LSI (3701) on the Servo I/F P.C.B..
102	SPEED COMMAND	Speed command is incorrect.	• Check the program.
103	NO PROG. (EXT)	External Ō number search error.	◦ Check the Ō number.
104	BUBBLE ALARM	Read out and write in to the bubble memory are impossible.	◦ Check the bubble memory. ◦ Check the parameter.
105	SERVO I/F BUS	Read out and write in to the servo I/F P.C.B. are impossible.	◦ Check the servo I/F P.C.B.
106			

Alarm No.	Message	Description	Management
107	PROG.ERR (G-CODE)	G code other than the G00 group has been entered.	◦ Check the program.
108	OFFSET NO.	Tool offset number is wrong.	ditto
109	PROG.ERR (G-CODE)	G code can't be used in the G08 group.	ditto
110	PROG.ERR (G-CODE)	G code can't be used in the G02 group.	ditto
111	AXIS ERR	Number of simultaneous axes is excessive.	◦ Check the parameter. ◦ Check the program.
112	NO FEED COMMAND	No F code in G01. G02 or G03.	◦ Check the program.
113	REFERENCE	G30 or B code without zero return	◦ Make the zero return.
114	G28 ERR	Software alarm while G28	◦ Check the program.
115	G NO USE	Improper G code.	ditto
116 117 118	R DATA L " P "	The data is abnormal.	ditto
119	G10 FORMAT ERROR	G10 command error.	ditto
120			
121			
122	G27 ZRN FAULT	Zero point return check error.	◦ Check the P.C.B. and the servo unit.
123			
124			
125			
126			
127			

Alarm NO.	Message	Description	Management
128	MINUS SIGNAL	Negative data is included in the parameters or the offset on the tape.	◦ Check the parameter or the tape.
129	DECIMAL POINT	Abnormal number of digits in the parameters or the offset on the tape.	ditto
130			
131	DUPLICATE O NO	Number has already been stored.	◦ Check the program.
132	DUPLICATE O NO=0	There is O number = 0 in the memory and no 0 number in the registered program.	ditto
133	PROGRAM OVER	The number of programs exceeds the storage capacity of the memory.	◦ Check the memory capacity. ◦ CONDENSE in the EDIT screen.
134	PRINT NOT READY	Printer is not ready. Macro print sentence error.	◦ Check the printer. ◦ Check the program.
135	O ZERO	No maximum number of programs in the file count unit.	◦ ODF function in the IN screen. ◦ And load the programs.
136	NON PROG. STORAGE	A tape memory area is over.	◦ Check the memory capactity. ◦ CONDENSE in the EDIT screen.
137	NOT CODE	Format error in the tape.	◦ Check the tape and the reader
138			
139			
140			
141	DIRECTORY BROKEN	Dictionary controlling programs has been damaged.	◦ ODF function in the IN screen. ◦ And load the programs.
142	FILE BROKEN	Program has been partially damaged.	◦ Clear the program and load it

Alarm NO.	Message	Description	Management
143	DATA MISMATCH	Dictionary covering one program has been damaged.	◦ Clear the program and load it.
144	BUBBLE NO MEMORY	Bubble memory is improperly.	◦ Check the bubble P.C.B. and the bus lines.
145	BUBBLE READ	It's impossible to read out of the bubble memory.	ditto
146	BUBBLE WRITE	It's impossible to write in the bubble memory.	ditto
147	BUBBLE PF	Abnormal power on the bubble memory.	◦ Check the power on the bubbl P.C.B..
148	BUBBLE BLA		
149	BUBBLE ECXXXX	XXXX errors status.	◦ Check the bubble P.C.B. and the bus lines.
150			
151			
152			
153			
154			
155			
156			
157			
158			
159			
160			

Alarm No.	Message	Description	Management
161	IMG. PROG	Hypothetical axis interpolation program error.	◦ Check the program.
162	S. GUARD PROG	Safety guard program error.	ditto
163	S. GUARD LMT	Safety guard stroke limit error.	ditto
164	+X SF LMT2	Soft stroke limit Ⅱ.	◦ Correct the program. ◦ Move axis to the safe side.
165	−X 〃		
166	+Y 〃		
167	−Y 〃		
168	+Z 〃		
169	−Z 〃		
170	+A 〃		
171	−A 〃		
172	+B 〃		
173	−B 〃		
174	MIRROR IMAGE ERR.	Mirror image program error.	◦ Check the program.
175	G68 ERR	There is no 2 axes command in G68	ditto
176	IN SF LMT2	Soft stroke limit Ⅱ.	◦ Correct the program. ◦ Move axis to the safe side.
177	C/R ERR.	Optional angle chamfering corner R program error.	◦ Check the program.
178	HRL/SIN ERR.	Maximum speed over in herical cutting or sine interpolation.	ditto
179	G53 ERROR	Machine coordinate system was selected in G91	ditto
180			

(10-2) SEICOS-LII alarms

Alarm NO.	Message	Description	Management
001	+X OVER TRAVEL	OT switch has been stepped on.	◦ Correct the program.
002	−X "		◦ Move axis to the safe side.
003	+Z "		
004	−Z "		
005	+3 "		
006	−3 "		
007	+4 "		
008	−4 "		
009			
010			
011	X SERVO ALARM	The motor had a large error.	◦ Check the feedback and power lines.
012	Z "		◦ Check the brush contact.
013	3 "		◦ Check the voltage.
014	4 "		◦ Replace the P.C.B. (Servo I/F)
015			◦ Check the parameter.
016			
017	X SERVO UNIT ALARM	Alarm in the servo amplifier.	◦ Check the alarm LEDs.
018	Z "		◦ Check the input signals.
019	3 "		◦ Check the fuses.
020	4 "		◦ Check the voltage.
021			◦ Check the motor and T.G.
022			◦ Replace the amplifier unit.
023	X NON FEED BACK	The motor feedback has been broken.	◦ Check the feedback lines.
024	Z "		◦ Check the P.G. or Magnescale, Heidenhein.
025	3 "		
026	4 "		

Alarm NO.	Message	Description	Management
027			
028			
029			
030	DIP SW SET	Dip switch set error on the S16II P.C.B..	◦ Check the dip switches on the S16II P.C.B..
031	WATCHDOG ALARM	NC control software cannot work.	◦ Check the S16II P.C.B.. ◦ Check the voltage on the P.C.B.
032	MACHINE ALARM	Machine alarms from the sequencer.	◦ See the screen of the sequencer and check.
033	BATTERY ALARM	An abnormality in the battery.	◦ Check the battery.
034 035 036 037 038 039	X GRID SIGNAL Z 〃 3 〃 4 〃	The one turn signal isn't properly.	◦ Adjust the dogs of the zero return. ◦ Check the signal on the feedback lines.
040			
041	PROGRAM ERROR	Program error.	Check the values. ◦ maximum command ◦ negative number ◦ non existing G code ◦ macro in MDI ◦ macro errors ◦ B command (5 degrees method) ◦ Axial move command in MDI after program restart.
042			

Alarm NO.	Message	Description	Management
043			
044			
045			
046			
047			
048	NOSE-R PROG.	Nose R offset program error.	◦ Check the program.
049	NOSE-R INTF	Nose R offset interference check error.	ditto
050	NOSE-R ERROR	Nose R offset cross over point doesn't exist.	ditto
051	DIVIDE ZERO	0 DIV interrupt.	ditto
052	NEG. SQUARE ROOT	Negative square root	ditto
053	UNDER FLOW	An under flow took place.	ditto
054	OVER FLOW	An over flow took place.	ditto
055			
056			
057			
058	+X SOFT OT	The soft stroke limit.	◦ Check the program.
059	−X "		◦ Move axis to the safe side.
060	+Z "		
061	−Z "		
062	+3 "		
063	−3 "		
064	+4 "		
065	−4 "		

Alarm NO.	Message	Description	Management
066 067			
068	PROG. ERR (R)	Wrong radius R.	◦ Check the program.
069			
070			
071	CIRCLE ERROR	An end point can't be detected when specifying a circle.	ditto
072			
073			
074	FORMAT 1	Format error other than formula.	ditto
075	FORMAT 2	Format error of formula.	ditto
076	UNDEFIN #NO	No such variable.	ditto
077	#NO NOT LEFT	Variable doesn't represent the left side.	ditto
078	[ ] LIMIT	Multiplexity of parenthesis.	ditto
079	[ ] UNMATCH	Numerically illegal parenthesis.	ditto
080	MACRO & N/C	A macro and N/C statement have interacted.	ditto
081	GO TO ERROR	No GO TO branch address or subprogram is available.	ditto
082	DO END NO	DO END determination number error.	ditto
083	DO LIMIT	DO END multiplexity error.	ditto
084	DO FORMAT	DO END loops are crossed	ditto

Alarm No.	Message	Description	Management
085	BUFFER OUT	Memory are insufficient to process a macro.	◦ Check the memory capacity.
086			
087			
088			
089			
090	PARAM	Parameter data incomplete.	◦ Check the parameter.
091			
092			
093			
094			
095			
096			
097			
098			
099			
100	AXIS DATA OVER	Move command is too large.	◦ Check the program.
101	CONTROL LSI ERR	Interpolator is not ready.	◦ Check the LSI (3701) on the Servo I/F P.C.B..
102	SPEED COMMAND	Speed command is incorrect.	◦ Check the program.
103	NO PROG. (EXT)	External O number search error.	◦ Check the O number.
104	BUBBLE ALARM	Read out and write in to the bubble memory are impossible.	◦ Check the bubble memory. ◦ Check the parameter.
105	SERVO I/F BUS	Read out and write in to the servo I/F P.C.B. are impossible.	◦ Check the servo I/F P.C.B.
106			

Alarm NO.	Message	Description	Management
107	PROG.ERR (G-CODE)	G code other than the G00 group has been entered.	◦ Check the program.
108	OFFSET NO.	Tool offset number is wrong.	ditto
109	PROG.ERR (G-CODE)	G code can't be used in the G08 group.	ditto
110	PROG.ERR (G-CODE)	G code can't be used in the G02 group.	ditto
111	AXIS ERR	Number of simultaneous axes is excessive.	◦ Check the parameter. ◦ Check the program.
112	NO FEED COMMAND	No F code in G01, G02 or G03.	◦ Check the program.
113	REFERENCE	G30 or B code without zero return	◦ Make the zero return.
114			
115	G NO USE	Improper G code.	◦ Check the program.
116 117 118	R DATA L " P "	The data is abnormal.	ditto
119	G10 FORMAT ERROR	G10 command error.	ditto
120	N DATA	The data is abnormal.	ditto
121			
122	G27 ZRN FAULT	Zero point return check error.	◦ Check the P.C.B. and the servo unit.
123			
124	Q-SETTER ZRN	Q-Setter without zero return.	◦ Make the zero return.
125	TOOL SET ERROR	NC PRO. TOOL and SPARE TOOL data is 0 in the TOOL LIFE.	◦ Check how to use the function.
126	NOT USE TOOL	Tool number is 0 or more than 33 in the TOOL LIFE.	ditto
127			

Alarm No.	Message	Description	Management
128	MINUS SIGNAL	Negative data is included in the parameters or the offset on the tape.	◦ Check the parameter or the tape.
129	DECIMAL POINT	Abnormal number of digits in the parameters or the offset on the tape.	ditto
130	PRINT NOT READY	Printer is not ready. Macro print sentence error.	◦ Check the printer. ◦ Check the program.
131	DUPLICATE O NO	Number has already been stored.	◦ Check the program.
132	DUPLICATE O NO=0	There is O number = 0 in the memory and no 0 number in the registered program.	ditto
133	PROGRAM OVER	The number of programs exceeds the storage capacity of the memory.	◦ Check the memory capacity. ◦ CONDENSE in the EDIT screen.
134			
135	O ZERO --	No maximum number of programs in the file count unit.	◦ ODF function in the IN screen. ◦ And load the programs.
136	NON PROG. STORAGE	A tape memory area is over.	◦ Check the memory capactity. ◦ CONDENSE in the EDIT screen.
137	NOT CODE	Format error in the tape.	◦ Check the tape and the reader.
138			
139			
140			
141	DIRECTORY BROKEN	Dictionary controlling programs has been damaged.	◦ ODF function in the IN screen. ◦ And load the programs.
142	FILE BROKEN	Program has been partially damaged.	◦ Clear the program and load it.

Alarm NO.	Message	Description	Management
143	DATA MISMATCH	Dictionary covering one program has been damaged.	◦ Clear the program and load it.
144	BUBBLE NO MEMORY	Bubble memory is improperly.	◦ Check the bubble P.C.B. and the bus lines.
145	BUBBLE READ	It's impossible to read out of the bubble memory.	ditto
146	BUBBLE WRITE	It's impossible to write in the bubble memory.	ditto
147	BUBBLE PF	Abnormal power on the bubble memory.	◦ Check the power on the bubble P.C.B..
148	BUBBLE BLA		
149	BUBBLE ECXXXX	XXXX errors status.	◦ Check the bubble P.C.B. and the bus lines.
150	G70 ERROR	Multiple repetitive cycle error.	◦ Check the program.
151	G71 "	"	"
152	G72 "	"	"
153	G73 "	"	"
154	G74 "	"	"
155	G75 "	"	"
156	G76 "	"	"
157			
158			
159			
160			

Alarm No.	Message	Description	Management
161			
162			
163			
164	+X SF LMT3	Soft stroke limit Ⅲ.	• Correct the program. • Move axis to the safe side.
165	−X 〃		
166	+Z 〃		
167	−Z 〃		
168	+3 〃		
169	−3 〃		
170	+4 〃		
171	−4 〃		
172	IN SF LMT3		
173			
174	MIRROR IMAGE ERR.	Mirror image program error.	• Check the program.
175			
176	IN SF LMT2	Soft stroke limit Ⅱ.	• Correct the program. • Move axis to the safe side.
177	C/R ERR.	Optional angle chamfering corner R program error.	• Check the program.
178			
179	G53 ERROR	Machine coordinate system was selected in G91	ditto
180			

(10-3) SEQUENCER (M16II) alarms

(System)

DISPLAY	DESCRIPTION ETC.
5000 Comment ⟆ 5117 Comment	Alarms for Ladder Sequence Program. (MACHINE ALARM)
An ⟆ Dn (n is a numeral)	Alarms for machining monitoring device.

(P.C.B.)

Alarm display	Contents	Countermeasure	Display method
BATTERY or BATTERY ALARM	Voltage drop at memory backup battery	Replace the battery, check the wiring.	LED CRT right upper part
+15V POWER DOWN+15V	+15V power abnormality	Check +15V power voltage	CRT center
+12V or POWER DOWN +12V	+12V power abnormality	Check +15V power voltage	CRT center
-15V or POWER DOWN -15V	-15 power abnormality	Check -15V power voltage	CRT center
8086 or 8086 CPU ALARM	8086 CPU abnormality	Replace the master board	LED CRT center
Z80 or Z80 CPU ALARM	Z80 CPU abnormality	Replace the master board	LED CRT center
SUM CHECK ERROR	SUM-check error of ladder program area	Replace the master board and re-load the ladder program.	CRT right upper part
SLBUS TABLE ERROR	Setting error of SLBUS table	Check/adjustment of DIP SW SLBUS table or slave	CRT center
SLBUS NOT READY #xx	#xx I/O slave does not operate at input time of power.	Check/adjustment of #xx I/O slave wiring and setting of DIP SW.	CRT center
SLBUS ERROR #xx	Poor response of #xx I/O slave.	Check/replace of I/O slave wiring.	CRT right lower part

(11) NC diagnose

(11-1) SEICOS-MII diagnose

No.	PC→NC. DATA							
01	Zero return mode	Rapid feed mode	JOG mode	Handle mode		MDI mode	Memory mode	EDIT mode
02	+Y	-X	+X	*FV16	*FV8	*FV4	*FV2	*FV1
	Feed axis direction					Override		
03	DRN Dry run	BDT1 Block skip	SBK Single block	-4	+4	-Z	+Z	-Y
					Feed axis direction			
04	DLK Display lock	MLK Machine lock	AFL Auxiliary function lock	*ESP Emergency stop	ERS External reset	OVC Override cancel	ZNG Z Cancel	KEY Lock key
05	HZ	HY	HX	*JV16	*JV8	*JV4	*JV2	*JV1
	Handle feed axis				JOG feedrate			
06	FIN End of auxiliary function	ALM Machine alarm	H4 Handle 4th axis	MP4	MP2	MP1	ROV2	ROV1
				Handle feedrate magnification			Rapid feed override	
07		*SP Feed hold	ST Start	*All	*IT4	*ITZ	*ITY	*ITX
						Interlock		
08	BDT9	BDT8	BDT7	BDT6	BDT5	BDT4	BDT3	BDT2
			Optional block skip					
09	DTCH4	DTCHZ	DTCHY	DTCHX	*DEC4	*DECZ	*DECY	*DECX
		Direct axis removal			Origin return deceleration			
10	SVR4	SVR3	SVRZ	SVRX	OFH Tool Setter	WSH W Setter Hole	WSS W Setter Surface	WSC W Setter Coord
	Servo ready							
11	*SVF4	*SVFZ	*SVFY	*SVFX	MI4	MIZ	MIY	MIX
	Servo off					Mirror image		
12	SKIP	SPD	SPC	SPB	SPA	SVON Servo On	B2F Table Unclump	B1F Table Clump
		Spindle override						
13	*-L4	*+L4	*-LZ	*+LZ	*-LY	*+LY	*-LX	*+LX
			Overtravel					
14	*-ED4	*+ED4	*-EDZ	*+EDZ	*-EDY	*+EDY	*-EDX	*+EDX
			External deceleration					
15	GST Gear shift	SOR Orien-tation	SSTP Spindle stop	GRB Gear B	GRA Gear A	SAR Speed achieved	F1D F1 digit	ABS Absolute
16	AGSTB	AG24	AG24	AG21	AG18	AG14	AG12	AG11
			Arbitrary angle in the manual mode					

No.	PC → NC DATA							
17	TLRST Tool life	OVRCD	BRN Block return	AGJ Manual arbitrary angle	RRW Rewind	SRN Program restart	T Tape	S Step
18	TLSKP	TL64	TL32	TL16	TL08	TL04	TL02	TL01
				Tool life				
19	*BECLP Table	*BEUCL Table	AGST	WN16	WN8	WN4	WN4	WN1
					Workpiece number			
20	ESIB	EA6	EA5	EA4	EA3	EA2	EA1	EA0
	External data strobe						External data input	
21	ED7	ED6	ED5	ED4	ED3	ED2	ED1	ED0
22	ED15	ED14	ED13	ED12	ED11	ED10	ED9	ED8
23	UI7	UI6	UI5	UI4	UI3	UI2	UI1	UI0
				User macro DI				
24	UI15	UI14	UI13	UI12	UI11	UI10	UI9	UI8
25	UNIT	NOP No option	Override Memory	End previous notice input		Work Shape Set	Tool Length Set	Safety Guard
26			3 M.P.G.	G30	G29	Point 1	Point 2	Set Point
27	SNG	*SVF5 Servo Off	*DEC5 Deceleration	*IT5 Inter Lock	*-ED5 External Deceleration	*+ED5 External Deceleration	*-L5 -OT	*+L5 +OT
28	H5 Handle	*ITB Inter Lock	*DEC6 Deceleration	-B Table - Direction	+B Table + Direction	MI5 Mirror	-5 Select	+5 Select
29								
30								
31				Key code				
32			Manual pulse generator data					

No.	NC→PC, DATA							
33	RWD Rewind in progress	ZR24	ZP2Z	ZP2Y	ZP2X	RST Reset signal	AL Alarm signal	DEN Distribution signal
		No. 2 reference point return end						
34	SA Servo ready	MA Ready	RPD Rapid feed in progress		ZP4	ZPZ	ZPY	ZPX
					Reference point return end			
35	DST Manual input start	BF B strobe	TF T strobe	SF S strobe	MF M strobe	OP Automatic operation in progress	SPL Automatic operation paused	STL Automatic operation start in progress
36	MMIY Mirror	SEY Select Y	+Y Direction	TAP	SV2 Servo Off	SV1 Servo On	B2 Table Unclamp	B1 Table Clamp
37	NMI4 Mirror	SE4 Select 4	INCH	IPEN	MMIZ Mirror	SEZ Select Z	MMIX Mirror	SEX Select X
38	TLCHB Tool Life	TLCHA Tool Life	ESEND External Data	EREND External Data	MMI5 Mirror	SE5 Select 5	ZP25 5th 2nd Zero	ZP5 5th Zero
39	M28	M24	M22	M21	M18	M14	M12	M11
				M-codes BCD				
40	M48	M44	M42	M41	M38	M34	M32	M31
41	T28	T24	T22	T21	T18	T14	T12	T11
				T code BCD				
42	T48	T44	T42	T41	T38	T34	T32	T31
43	R08	R07	R06	R05	R04	R03	R02	R01
				S code 12Bit				
44	B18	B14	B12	B11	R12	R11	R10	R09
45	B38	B34	B32	B31	B28	B24	B22	B21
				B code BCD				
46	GRST Gear Shift	SHYK End of preliminary notice	ZP34	ZP3Z	ZP3Y	ZP3X	HIG	LWG
				3rd Reference point return			High Gear	Low Gear
47	U07	U06	U05	U04	U03	U02	U01	U00
				User macro DO				
48	U015	U014	U013	U012	U011	U010	U09	U08

No.	NC → PC. DATA							
49	MMLK	MDLK	MABS	GSTD Change of speed	MSBK	MBDT1	MDRN	MAFL
50	MBDT9	MBDT8	MBDT7	MBDT6	MBDT5	MBDT4	MBDT3	MBDT2
51	M30	M02	M01	M00	CSS	THRD	B.CLP Table	BUCL Table
52	ZPB Table Zero	RGMOD	SET POINT 1	SET POINT 2	SSP Spindle	SRV Fixed Cycle	FMF	G81 EF
53								
54								
55								
56	Buzzer request (ON at 80H)							

57	Y-AXIS PULSE CODER FEEDBACK SIGNAL				X-AXIS PULSE CODER FEEDBACK SIGNAL			
	DISCONNECTION *WBALY	ONE-ROTATION SIGNAL PCY	PHASE B FBBY	PHASE A FBAY	DISCONNECTION *WBALX	ONE-ROTATION SIGNAL PCX	PHASE B FBBX	PHASE A FBAX
58	THREADING START *SCWST	POSITION CODER FEEDBACK SIGNAL			Z-AXIS PULSE CODER FEEDBACK SIGNAL			
		ONE-ROTATION SIGNAL PC	PHASE B PB	PHASE A PA	DISCONNECTION *WBALZ	ONE-ROTATION SIGNAL PCZ	PHASE B FBBZ	PHASE A FBAZ
59			ERROR EXCESSIVE			DISTRIBUTION FINISH		
			*AINTZ	*AINTB	*AINTX	DENC	DENB	DENA
60								
61	X BACKLASH DIRECTION	IN X PITCH ERROR EXECUTION	X PITCH ERROR REMAINING PULSE COUNTER					
62	Y BACKLASH DIRECTION	IN Y PITCH ERROR EXECUTION	Y PITCH ERROR REMAINING PULSE COUNTER					
63	Z BACKLASH DIRECTION	IN Z PITCH ERROR EXECUTION	Z PITCH ERROR REMAINING PULSE COUNTER					
64	TAPE READER SIGNAL				INTERRUPT FROM 8255	BATTERY ALARM	SKIP INPUT 2	SKIP INPUT 1
	SENSE INPUT		CONTROL OUTPUT	SPROCKET INPUT				

Servo I/F & Tape Reader

(11-2) SEICOS-LII diagnose

No.	PC → NC. DATA							
01	Zero return mode	Rapid feed mode	JOG mode	Handle mode		MDI mode	Memory mode	EDIT mode
02	+Z	-X	+X	*FV16	*FV8	*FV4	*FV2	*FV1
	Feed axis direction					Override		
03	DRN Dry run	BDT1 Block skip	SBK Single block	-4	+4	-3	+3	-Z
					Feed axis direction			
04	DLK Display lock	MLK Machine lock	AFL Auxiliary function lock	*ESP Emergency stop	ERS External reset	OVC Override cancel		KEY Lock key
05	H3	HZ	HX	*JV16	*JV8	*JV4	*JV2	*JV1
	Handle feed axis				JOG feedrate			
06	FIN End of auxiliary function	Machine alarm	H4 Handle 4th axis	MP4	MP2	MP1	ROV2	ROV1
				Handle feedrate magnification			Rapid feed override	
07		*SP Feed hold	ST Start	STLK Interrupt	*IT4	*IT4	*IT3	*ITX
						Interlock		
08	BDT9	BDT8	BDT7	BDT6	BDT5	BDT4	BDT3	BDT2
			Optional block skip					
09	DTCH4	DTCH3	DTCHZ	DTCHX	*DEC4	*DEC3	*DECZ	*DECX
		Direct axis removal			Origin return deceleration			
10	SVR4	SVR3	SVRZ	SVRX	GR4	GR3	GR2	GR1
		Servo ready				Gear selection		
11	*SVF4	*SVF3	*SVFZ	*SVFX	MI4	MI3	MIZ	MIX
		Servo off				Mirror image		
12		SPD	SPC	SPB	SPA		SMZ Error detect	CDZ Chamfer-ing
			Spindle override					
13	*-L4	*+L4	*-L3	*+L3	*-LZ	*+LZ	*-LX	*+LX
				Overtravel				
14	*-ED4	*+ED4	*-ED3	*+ED3	*-EDZ	*+EDZ	*-EDX	*+EDX
			External deceleration					
15	GST Gear shift	SOR Orien-tation	SSTP Spindle stop			SAR Speed achieved	F1D F1 digit	ABS Absolute
16	AGSTB	AG24	AG24	AG21	AG18	AG14	AG12	AG11
			Arbitrary angle in the manual mode					

No.	PC → NC DATA							
17	TLRST Tool life		BRN Block return	AGJ Manual arbitrary angle	RRW Rewind	SRN Program restart		
18	TLSKP	TL64	TL32	TL16	TL08	TL04	TL02	TL01
				Tool life				
19	SECLP	SEUCP	AGST	WN16	WN8	WN4	WN4	WN1
					Workpiece number			
20	ESTB	EA6	EA5	EA4	EA3	EA2	EA1	EA0
	External data strobe						External data input	
21	ED7	ED6	ED5	ED4	ED3	ED2	ED1	ED0
22	ED15	ED14	ED13	ED12	ED11	ED10	ED9	ED8
23	UI7	UI6	UI5	UI4	UI3	UI2	UI1	UI0
				User macro DI				
24	UI15	UI14	UI13	UI12	UI11	UI10	UI9	UI8
25	UNIT	NOP No option		End previous notice input				
26	*ZSET Z-setter mode			TCLUMP Turret clamp	TFA8	TFA4	TFA2	TFA1
						Turret face data		
27								
28					*QSET Q-setter mode	PRC Position record	ZAE	XAE
							Automatic tool offset	
29								
30								
31				Key code				
32			Manual pulse generator data					

No.	NC→PC DATA							
33	RWD Rewind in progress	ZR24	ZP23	ZP2Z	ZP2X	RST Reset signal	AL Alarm signal	DEN Distribution signal
		No. 2 reference point return end						
34	SA Servo ready	MA Ready	RPD Rapid feed in progress		ZP4	ZP3	ZPZ	ZPX
					Reference point return end			
35	DST Manual input start	CF C strobe	TF T strobe	SF S strobe	MF M strobe	OP Automatic operation in progress	SPL Automatic operation paused	STL Automatic operation start in progress
36	NMIZ Mirror Z	SEZ Select Z				NG Measuring NG	NGSTP JING	ATLIF No Spare Tool
37	NMI4 Mirror 4	SE4 Select 4	INCH	IPEN	MMI3 Mirror 3	SE3 Select 3	MMIX Mirror X	SEX Select X
38	TLCHB Tool Select	TLCHA	ESEND	EREND				Q/Z setters in touch
39	M28	M24	M22	M21	M18	M14	M12	M11
				M-codes BCD				
40	ZP34	ZP33	ZP3Z	ZP3X	M38	M34	M32	M31
	No. 3 reference point return end							
41	T28	T24	T22	T21	T18	T14	T12	T11
				T code BCD				
42	T48	T44	T42	T41	T38	T34	T32	T31
43	R108	R07	R06	R05	R04	R03	R02	R01
				S code 12Bit				
44					R12	R11	R10	R09
45	C28	C24	C22	C21	C18	C14	C12	C11
				S code BCD				
46		SHYK End of preliminary notice			C38	C34	C32	C31
47	U07	U06	U05	U04	U03	U02	U01	U00
				User macro DO				
48	U015	U014	U013	U012	U011	U010	U09	U08

No.	NC→PC DATA							
49	MMLK	MDLK	MABS	GSTD Change of speed	MSBK	MBDT1	MDRN	MAFL
50	MBDT9	MBDT8	MBDT7	MBDT6	MBDT5	MBDT4	MBDT3	MBDT2
51	M30	M02	M01	M00	CSS	THRD	SCLP	SUCL
52			JOG STOP	Q.S	J14	J13	J12	J11
53								
54								
55								
56			Buzzer request (ON at 80H)					

No.	Servo I/F & Tape Reader DATA							
57	*WBALE	PCZ	FBBZ	FBAZ	*WBALX Disconnection	PCX 1 turn	FBBX Phase B	FBAX Phase A
	Z axis pulse coder feedback signal				X axis pulse coder feedback signal			
58	*SCWST Thread-cutting start	PC 1 turn	PB Phase B	PA Phase A	*WBAL3	PC3	FBB3	FBA3
		Position coder feedback signal			3 axis pulse coder feedback signal			
59			*AINT3	*AINTZ	*AINTX	DENC	DENB	DENA
			Error in position control LSI too significant			End of distribution in distributor LSI		
60			*ZSTCH Z-setter touch signal	*SNDKH Core height touch signal	*QSMZ	*QSPZ	*QSMX	*QSPX
					Q-setter touch signal			
61	BKRMX Backlash memory X	PINGX Pitch error execution in progress X	PERXC5	PERXC4	PERXC3	PERXC2	PERXC1	PERXC0
			Pitch error remainder pulse counter X					
62	BKRMZ Backlash memory Z	PINGX Pitch error execution in progress Z	PERZC5	PERZC4	PERZC3	PERZC2	PERZC1	PERZC0
			Pitch error remainder pulse counter Z					
63	BKRM3 Backlash memory 3	PING3 Pitch error execution in progress 3rd	PER3C5	PER3C4	PER3C3	PER3C2	PER3C1	PER3C0
			Pitch error remainder pulse counter 3rd					
64	SO Sense input		IBF Control output	INTE Sprocket input	INTR 8255 interrupted	BTALM Battery alarm	SKIP2 Skip 2	SKIP1 Skip 1
	Tape reader signal							

(11-3) Multi Status menu

```
**********************
*  MULTI STATUS MENU  *
**********************

        1 JOG

        2 AUTO RUN

        3 HANDLE

        4 SPEED

        5 PUSH KEY

      SELECT PAGE ?
```

Check the machine status.

Select menu(1~5)

Return [ORIGN]

[1] JOG

```
-- MULTI STATUS --

    (1) JOG FEED CONDITION

  MODE SW.              JOG
  AXIS SW.              +X -Y +Z
* INTERLOCK             X
  OVER TRAVEL           -X +Y
  SOFT LIMIT            +Y -Z
  RESET                    OFF
```

[2] AUTO RUN

```
-- MULTI STATUS --

    (2-1) AUTO RUN CONDITION

  MODE SW.              AUTO
  START                    OFF
* RESET                 ON
  AUTO RUN                 OFF
  FEED HOLD                OFF
  SINGLE BLOCK             OFF
  MOVING AXIS
  INPOS CHECK              OFF
  FIN WAIT                 OFF
  FIN                      OFF
  DEN WAIT                 OFF
  DEN AXIS              X  Y  Z
```

```
    (2-2)

  INTERLOCK
  OVER TRAVEL
  SOFT LIMIT
  DWELL                    OFF
```

[3] HANDLE

```
-- MULTI STATUS --

    (3) HANDLE CONDITION

   MODE SW.              HANDLE
   SELECT AXIS           X
   RATIO                 10/1
   INPUT PULS            +
*  OVER TRAVEL           +X -Y
   SOFT LIMIT
   INTERLOCK             Y
   RESET                    OFF
```

[4] SPEED

```
-- MULTI STATUS --

    (4-1) SPEED CONDITION

   MODE SW.              AUTO
   FEEDRATE OVR.           70 %
   RAPID OVR.              25 %
   FEEDRATE              1000 mm/min
   G01 GROUP             G01
   F DATA                 100 mm/min
   OVR. CANCEL              OFF
   DRYRUN                   OFF
   CANCEL AXIS           X Y Z
   ZRN COMPLETED         X Y Z
   ZRN DEC LS            X Y Z
   EXT DEC LS            +X -Y +Z
```

```
(4-2)

RUN AXIS
NO UPDOWN


REAL SPEED (X)          0.000 in/min
REAL SPEED (Y)          0.000 in/min
REAL SPEED (Z)          0.000 in/min
```

[5] PUSH KEY

```
                                  Ver. 0XXX
   (5-1) PUSH KEY MEMORY
1    Z
A
7
9
B
X
```

Left-up ---Newest key in
Right-down---Oldest key in

(12) NC parameter

(12-1) SEICOS-MII parameter

No.	Bit	Description
0	0	TV CHECK (1: Even Character 0: Stored Character)
	1	PUNCH CODE (1: ISO 0: EIA)
	2	INPUT UNIT (1: inch 0: mm)
	3	TAB PUNCH
	4	EOB PUNCH (0/0) LF CR CR (1/0) LF CR (0/1) LF
	5	"
	6	Remote Operation
	7	SPACE PUNCH
1	0	Tape stop at M02
	1	Tape stop at M30
	2	Tape stop at M99
	3	Tape stop at next Ō No.
	4	RS232C/parallel (1: Parallel Tape Reader 0: RS232C Tape Reader)
	5	Memory Card
	6	
	7	
2	0	Reference point return direction (X) (1: − 0: +)
	1	Reference point return direction (Y) (1: − 0: +)
	2	Reference point return direction (Z) (1: − 0: +)
	3	Reference point return direction (4th) (1: − 0: +)
	4	ATC position (X) (1: G30 Position 0: G28 Position)
	5	ATC position (Y) (1: G30 Position 0: G28 Position)
	6	ATC position (Z) (1: G30 Position 0: G28 Position)
	7	ATC position (4th) (1: G30 Position 0: G28 Position)
3	0	
	1	In-position check
	2	Table programming system〈B〉 (1: INC 0: ABS)
	3	Reference point return direction (5th) (1: − 0: +)
	4	Reference point return direction (SEQ.B) (1: − 0: +)
	5	Automatic drift compensation
	6	Disconnection check
	7	NC START key enabled/disabled (1: Disable 0: Enable)

No.	Bit	Description
4	0	Mirror image enabled/disabled (X)
	1	Mirror image enabled/disabled (Y)
	2	Mirror image enabled/disabled (Z)
	3	Mirror image enabled/disabled (4th)
	4	Mirror image enabled/disabled (5th)
	5	One directional positioning approach direction (X) (1:− 0:+)
	6	One directional positioning approach direction (Y) (1:− 0:+)
	7	One directional positioning approach direction (Z) (1:− 0:+)
5	0	Jog speed 1/10 (X)
	1	Jog speed 1/10 (Y)
	2	Jog speed 1/10 (Z)
	3	Jog speed 1/10 (4th)
	4	Jog speed 1/10 (5th)
	5	Post-ZRN automatic operation enabled
	6	Manual ZRN direct positioning
	7	B Axis
6	0	G40 I. J. enabled
	1	Diameter compensation type --- (1: Type B 0: Type A)
	2	Length compensation enabled axis (1: X.Y.Z 0: Z)
	3	Offset address (1: D 0: H)
	4	G76, G87 retract direction (1:− 0:+)
	5	G76, G87 retract axis (1: Y 0: X)
	6	G74, G84 dwell Appended
	7	Soft O.T. enabled/disabled (1: Disable 0: Enable)
7	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	

No.	Bit	Description
8	0	No. of controlled axes (0 0) 3 Axis (1 0) 4 Axis (0 1) 5 Axis
	1	No. of controlled axes
	2	4th-axis address (0 0) A (1 0) B (0 1) C (1 1) W
	3	4th-axis address
	4	5th-axis address (0 0) A (1 0) B (0 1) C (1 1) W
	5	5th-axis address
	6	SEQ.B enabled/disabled
	7	SEQ.B enabled/disabled indexing angle (1: 5 Degree 0: 1 Degree)
9	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	
10	0	Relative Position preset by Zero Return
	1	4th Axis used as rotary
	2	3 Manual Pulse Generator
	3	
	4	
	5	
	6	Dry Run is effective for Rapid
	7	Start Point (1: M70 0: Start)
11	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	

No.	Bit	Description
12	0	Coordinate Rotation (0/0) Old Easy (0/1) New Easy (1/1) FANUC
	1	〃 (0/0) Setter (0/1) Setter (1/1) Spec
	2	
	3	
	4	
	5	
	6	
	7	
13	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	
14	0	X Scaling
	1	Y Scaling
	2	Z Scaling
	3	4th Axis Single Direction Positioning
	4	5th Axis Approach Direction (1:− 0:+)
	5	Scaling 1/100
	6	Coordinate Rotation Angle Scaling 1/100
	7	
15	0	
	1	
	2	
	3	
	4	
	5	O No. 9000s Display upon execution of (1:Disable 0:Enable)
	6	O No. 9000s macro SBK enabled (1:Enable 0:Disable)
	7	O No. 9000s editing (1:Disable 0:Enable)

No.	Bit	Description
16	0	O No. 1 to 7999 macro SBK
	1	MDI macro SBK
	2	
	3	
	4	
	5	Display upon execution of O No. 8000s (1:Disable 0:Enable)
	6	O No. 8000s macro SBK (1:Disable 0:Enable)
	7	O No. 8000s editing (1:Disable 0:Enable)
17	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	
18	0	Machine VM select
	1	I, J, K Display in Circular interpolation
	2	Measure Z Display in Safety Guard (1:Location 0:Difference)
	3	Safety guard stop block selection (1:All Block 0:Once)
	4	Safety guard enabled/disabled
	5	Safety G work shape measuring method (*) Note
	6	Coordinate rotation enabled/disabled
	7	Stored Stroke Limit 2 prohibited area (1:External 0:Internal)
19	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	

No.	Description	Standard value
20	In-position width (X)	30 pulses
21	In-position width (Y)	30 pulses
22	In-position width (Z)	30 pulses
23	In-position width (4th)	30 pulses
24	Backlash amount (X)	"
25	Backlash amount (Y)	"
26	Backlash amount (Z)	"
27	Backlash amount (4th)	"
28	Rapid traverse constant (X)	msec
29	Rapid traverse constant (Y)	"
30	Rapid traverse constant (Z)	"
31	Rapid traverse constant (4th)	"
32	External deceleration speed	mm/min.
33	External deceleration speed (SEQ.B)	deg./min.
34	Diameter compensation cornering prohibit amount	mm
35	Sequence collation number	
36	M code for direct tap	
37	Finish speed override for tetragonal side cutting pattern cycle	%
38	Reference point return speed	mm/min.
39	Reference point return speed (SEQ.B)	deg./min.
40	Rapid traverse speed (X)	mm/min.
41	Rapid traverse speed (Y)	"
42	Rapid traverse speed (Z)	"
43	Rapid traverse speed (4th)	deg./min.
44	High-speed gear spindle maximum speed	rpm
45	High-speed gear spindle clamp speed	"
46	Low-speed gear spindle maximum speed	"
47	Low-speed gear spindle clamp speed	"
48	Spindle motor maximum speed	"
49	Gear shift spindle motor speed	"
50	High-speed gear spindle minimum speed	"
51	Spindle feedback	
52	Error in spindle maximum speed	
53	Spindle positioning speed	
54	Spindle acceleration constant	
55	Spindle minimum celerity speed	

No.	Description	Standard value
56	Automatic drift compensation time interval	min.
57		
58		
59	Reference point return override	25 %
60	Soft O.T. (+X)	mm
61	Soft O.T. (-X)	"
62	Soft O.T. (+Y)	"
63	Soft O.T. (-Y)	"
64	Soft O.T. (+Z)	"
65	Soft O.T. (-Z)	"
66	Soft O.T. (+4th)	
67	Soft O.T. (-4th)	
68	1st barrier (X)	mm
69	1st barrier (Y)	"
70	1st barrier (Z)	"
71	1st barrier (4th)	
72	2nd barrier (X)	mm
73	2nd barrier (Y)	"
74	2nd barrier (Z)	"
75	2nd barrier (4th)	
76	2nd reference point (X)	mm
77	2nd reference point (Y)	"
78	2nd reference point (Z)	"
79	2nd reference point (4th)	
80	3rd reference point (X)	mm
81	3rd reference point (Y)	"
82	3rd reference point (Z)	"
83	3rd reference point (4th)	
84	4th reference point (X)	mm
85	4th reference point (Y)	"
86	4th reference point (Z)	"
87	4th reference point (4th)	
88	Reference point shift amount (X)	mm
89	Reference point shift amount (Y)	"
90	Reference point shift amount (Z)	"
91	Reference point shift amount (4th)	

No.	Description	Standard value
92	Distance to reference block (Z)	mm
93	Distance to reference block (Y)	"
94	Distance to reference block (X)	"
95	Probe sphere diameter	10.000 mm
96	Probe sphere eccentric amount (X)	"
97	Probe sphere eccentric amount (Y)	"
98	Touch tool length Z	200.000 mm
99		
100	Rotouch return amount	0.500 mm
101	Minimum value for hole 3-point measurement	3,000 mm
102		
103		
104		
105		
106		
107	One directional positioning approach amount (X)	mm
108	One directional positioning approach amount (Y)	"
109	One directional positioning approach amount (Z)	"
110	One directional positioning approach amount (4th)	"
111	One directional positioning approach amount (5th)	"
112	Finish allowance for tetragonal side cutting pattern cycle	"
113	G73, G83 retract amount	"
114	G83 cutting start position	"
115	Scaling R	
116	Coordinate Rotation R	
117		
118	Soft O.T. (+5th)	
119	Soft O.T. (-5th)	
120	Auto corner override start	
121	Auto corner override end	
122	1st barrier (5th)	
123		
124	2nd barrier (5th)	
125		
126	2nd reference point (5th)	
127		

No.	Description	Standard value
128	3rd reference point (5th)	
129		
130	4th reference point (5th)	
131	X axis ATC position	
132	Reference point shift amount (5th)	
133	Reference point shift amount (SEQ.B)	deg.
134	Return amount from G28 O.T. (X)	mm
135	Return amount from G28 O.T. (Y)	"
136	Return amount from G28 O.T. (Z)	"
137	Return amount from G28 O.T. (4th)	
138	Return amount from G28 O.T. (5th)	
139	+Y barrier in machine VM	
140	In-position width (5th)	pulses
141	In-position width (SEQ.B)	"
142	Backalsh amount (5th)	"
143	Backlash amount (SEQ.B)	"
144	Rapid traverse constant (5th)	msec.
145	Rapid traverse constant (SEQ.B)	"
146	Rapid traverse speed (5th)	
147	Rapid traverse speed (SEQ.B)	
148	Internal angle in auto override	
149	Deceleration in auto override	
150		
151		
152		
153		
154		
155		
156		
157		
158		
159		
160	Acceleration/deceleration unrequired speed	mm/min.
161	Acceleration/deceleration unrequired speed (SEQ.B)	deg./min.
162		
163		
164		

No.	Description	Standard value
165		
166		
167		
168		
169		
170	Feedback detection ratio (X)	
171	Feedback detection ratio (Y)	
172	Feedback detection ratio (Z)	
173	Feedback detection ratio (4th)	
174	Feedback detection ratio (5th)	
175	Feedback detection ratio (SEQ.B)	
176	Macro (09010) call G code	
177	Macro (09011) call G code	
178	Macro (09012) call G code	
179	Macro (09013) call G code	
180	Macro (09014) call G code	
181	Macro (09015) call G code	
182	Macro (09016) call G code	
183	Macro (09017) call G code	
184	Macro (09018) call G code	
185	Macro (09019) call G code	—
186	Non buffering M code 1	
187	ditto 2	
188	ditto 3	
189	ditto 4	
190		
191		
192		
193		
194	Renishaw on-off speed	
195		

No.	Description	Standard value
1000	Pitch error compensation (X)	
1001	Reference point parameter No. (Y)	
1002	Reference point parameter No. (Z)	
1003	Reference point parameter No. (4th)	
1004	Reference point parameter No. (5th)	
1100	Pitch error compensation interval (X)	
1101	Pitch error compensation interval (Y)	
1102	Pitch error compensation interval (Z)	
1103	Pitch error compensation interval (4th)	
1104	Pitch error compensation interval (5th)	
2000	Pitch error compensation data (X)	
∫		
2149		
3000	Pitch error compensation data (Y)	
∫		
3149		
4000	Pitch error compensation data (Z)	
∫		
4149		

No.	Description	Standard value
5000	Pitch error compensation data (4th)	
5149		
JV1F	Contents jog speed	
1E	" " "	
1D	" " "	
1C	" " "	
1B	" " "	
1A	" " "	
19	" " "	
18	" " "	
17	" " "	
16	" " "	
15	" " "	
14	" " "	
13	" " "	
12	" " "	
11	" " "	
10	" " "	
0F	" " "	
0E	" " "	
0D	" " "	
0C	" " "	
0B	" " "	
0A	" " "	
09	" " "	
08	" " "	
07	" " "	
RV00	Rapid traverse override	
01	" " "	
10	" " "	
11	" " "	

No.	Description
300	EIA code representing [is entered as the perforation pattern.
301	EIA code representing] is entered as the perforation pattern.
302	EIA code representing # is entered as the perforation pattern.
303	EIA code representing * is entered as the perforation pattern.
304	EIA code representing = is entered as the perforation pattern.

No.	Bit	Description
305	0	Baud rates 4800: 0, 110: 1, 200: 0, 300: 1, 600: 0, 1200: 1, 2400: 0, 4800: 1, 9600: 0, 19200: 1
	1	4800: 0, 110: 0, 200: 1, 300: 1, 600: 0, 1200: 0, 2400: 1, 4800: 1, 9600: 0, 19200: 0
	2	4800: 0, 110: 0, 200: 0, 300: 0, 600: 1, 1200: 1, 2400: 1, 4800: 1, 9600: 0, 19200: 0
	3	4800: 0, 110: 0, 200: 0, 300: 0, 600: 0, 1200: 0, 2400: 0, 4800: 0, 9600: 1, 19200: 0
	4	Stop bit in I/O devices 1 (1: 1 bit 0: 2 bit)
	5	ditto 2 (ditto)
	6	
	7	
306	0	Baud rates
	1	ditto
	2	
	3	
	4	Control codes (DC1 thru DC4) in I/O devices 1 (1: Not 0: Used)
	5	ditto 2 (ditto)
	6	
	7	

No.	Bit	Description
317	0	Baud rates
	1	ditto
	2	
	3	
	4	Stop bit in I/O devices (1 : 1bit 0 : 2bit)
	5	Control codes (DC1 thru DC4) in I/O devices (1:Not 0: Used)
	6	
	7	

(12-2) SEICOS-LII parameter

No.	Bit	Description
0	0	TV CHECK (1: Even Character 0: Stored Character)
	1	PUNCH CODE (1: ISO 0: EIA)
	2	INPUT UNIT (1: inch 0: mm)
	3	TAB PUNCH
	4	EOB PUNCH (0,0) LF CR CR (1,0) LF CR (0,1) LF
	5	"
	6	Remote Operation
	7	SPACE PUNCH
1	0	Tape stop at M02
	1	Tape stop at M30
	2	Tape stop at M99
	3	Tape stop at next Ō No.
	4	RS232C/parallel (1: Parallel Tape Reader 0: RS232C Tape Reader)
	5	Memory Card
	6	Special G codes (0,0) A (1,0) B (0,1) C
	7	"
2	0	Reference point return direction (X) (1: − 0: +)
	1	Reference point return direction (Z) (1: − 0: +)
	2	Reference point return direction (3rd) (1: − 0: +)
	3	Reference point return direction (4th) (1: − 0: +)
	4	
	5	
	6	
	7	
3	0	Reference point return by Jog mode (1: Disable 0: Enable)
	1	
	2	
	3	
	4	2nd reference point set in SET screen
	5	Automatic drift compensation
	6	Disconnection check
	7	NC START key enabled/disabled (1: Disable 0: Enable)

No.	Bit	Description
4	0	Mirror image enabled/disabled (X)
	1	Mirror image enabled/disabled (Z)
	2	Mirror image enabled/disabled (3rd)
	3	Mirror image enabled/disabled (4th)
	4	Core height offset correction
	5	Wear 1 cleard by Q Setter
	6	Submicron
	7	Hitachi Seiki system
5	0	Jog speed 1/10 (X)
	1	Jog speed 1/10 (Z)
	2	Jog speed 1/10 (3rd)
	3	Jog speed 1/10 (4th)
	4	Inch thread cut E code
	5	Post-ZRN automatic operation enabled (1: No need 0: Enable)
	6	Manual ZRN direct positioning
	7	U.W data check
6	0	G40 I. K. enabled
	1	Tip R offset type (1: Type B 0: Type A)
	2	
	3	
	4	
	5	
	6	
	7	Soft O.T. enabled/disabled (1: Disable 0: Enable)
7	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	

No.	Bit	Description
8	0	No. of controlled axes (0,0) 2 Axis (1,0) 3Axis (0,1) 4 Axis
	1	No. of controlled axes
	2	3rd-axis address
	3	3rd-axis address
	4	4th-axis address
	5	4th-axis address
	6	
	7	
9	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	
10	0	Relative Position preset by Zero Return (1: Disable 0: Enable)
	1	
	2	
	3	
	4	Rough finishing after G71, G72
	5	Cut depth override during G71. G72 (1: Disable 0: Enable)
	6	Dry run is effective for Rapid
	7	
11	0	
	1	Spindle override
	2	Circumferential speed constant control
	3	Spindle override clamp during thread cutting
	4	External tool offset
	5	S five digits clamp
	6	Dry run during thread cutting
	7	

No.	Bit	Description
12	0	Measuring data is used for (0 0) judge (1 0) compensation (0 1) measure
	1	〃
	2	
	3	
	4	
	5	
	6	
	7	
13	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	
14	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	
15	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	

No.	Bit	Description
16	0	O No. 1 to 7999 macro SBK (1:Enable 0:Disable)
	1	MDI macro SBK (ditto)
	2	
	3	
	4	
	5	Display upon execution of O No. 8000s (1:Disable 0:Enable)
	6	O No. 8000s macro SBK (1:Enable 0:Disable)
	7	O No. 8000s editing (1:Disable 0:Enable)
17	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	
18	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	Stored stroke Limit 3 prohibited area (1:External 0:Internal)
19	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	

No.	Description	Standard value
20	In-position width (X)	30 pulses
21	In-position width (Z)	30 pulses
22	In-position width (3rd)	30 pulses
23	In-position width (4th)	30 pulses
24	Backlash amount (X)	"
25	Backlash amount (Z)	"
26	Backlash amount (3rd)	"
27	Backlash amount (4th)	"
28	Rapid traverse constant (X)	msec
29	Rapid traverse constant (Z)	"
30	Rapid traverse constant (3rd)	"
31	Rapid traverse constant (4th)	"
32	External deceleration speed	mm/min.
33	S X F Max	
34		
35	Sequence collation number	
36		
37		
38	Reference point return speed	mm/min.
39		
40	Rapid traverse speed (X)	mm/min.
41	Rapid traverse speed (Z)	"
42	Rapid traverse speed (3rd)	"
43	Rapid traverse speed (4th)	"
44	Spindle speed upper limit clamp	rpm
45	Spindle speed lower limit clamp	"
46	G96 initial clamp speed	"
47		"
48	Maximum spindle speed	"
49	Gear shift speed	"
50.	Orientation speed	"
51.	G1 spindle maximum speed	"
52	G2 "	"
53	G3 "	"
54	G4 "	"
55		

No.	Description	Standard value
56	Automatic drift compensation time interval	min.
57		
58	Q, Z setter rapid traverse override	%
59	Reference point return override	%
60	Soft O.T. (+X)	mm
61	Soft O.T. (-X)	"
62	Soft O.T. (+Z)	"
63	Soft O.T. (-Z)	"
64	Soft O.T. (+3rd)	"
65	Soft O.T. (-3rd)	"
66	Soft O.T. (+4th)	
67	Soft O.T. (-4th)	
68	1st barrier (X)	mm
69	1st barrier	"
70	1st barrier	"
71	1st barrier (4th)	
72	2nd barrier (X)	mm
73	2nd barrier (Z)	"
74	2nd barrier (3rd)	"
75	2nd barrier (4th)	
76	2nd reference point (X)	mm
77	2nd reference point (Z)	"
78	2nd reference point (3rd)	"
79	2nd reference point (4th)	
80	3rd reference point (X)	mm
81	3rd reference point (Z)	"
82	3rd reference point (3rd)	"
83	3rd reference point (4th)	
84	4th reference point (X)	mm
85	4th reference point (Z)	"
86	4th reference point (3rd)	"
87	4th reference point (4th)	
88	Reference point shift amount (X)	mm
89	Reference point shift amount (Z)	"
90	Reference point shift amount (3rd)	"
91	Reference point shift amount (4th)	

No.	Description	Standard value
92	Contact surface 2 (+X)	inch, mm
93	〃 (−X)	〃
94	〃 (+Z)	〃
95	〃 (−Z)	〃
96		
97		
98	Amount of retouch return in Q setter, Z setter	inch, mm
99	U.W limit value of offset wear 2	〃
100	Contact surface +X	〃
101	〃 −X	〃
102	〃 +Z	〃
103	〃 −Z	〃
104	Z sensor length	〃
105	Workpiece cordinate system movement (X)	〃
106	C sensor offset	〃
107	U.W limit value of offset wear 1	〃
108		
109		
110		
111		
112		
113		
114		
115		
116	Third barrier (+X)	mm

No.	Description	Standard value
117	Third barrier (+Z)	mm
118	〃 (+3rd)	〃
119	〃 (+4th)	〃
120	〃 (−X)	〃
121	〃 (−Z)	〃
122	〃 (−3rd)	〃
123	〃 (−4th)	〃
124		
125		
126		
127		
128		
129		
130		
131		
132		
133		
134	Return from X axis OT (G28)	mm
135	Return from Z axis OT	〃
136	Return from 3rd axis OT	〃
137	Return from 4th axis OT	〃
138		
139		
140		
141		

No.	Description	Standard value
142		
143		
144		
145		
146		
147		
148		
149		
150	Release in composite fixed cycle G71 and G72	inch , mm
151	Clearance in composite fixed cycle G71 and G72	"
152	Return in G74 and G75	"
153	Minimum cut depth in thread cutting cycle G76	"
154	Finish allowance in thread cutting cycle G76	"
155	Thread width in thread cutting cycle G76 and G92	
156	Thread angle in thread cutting cycle G76 and G92	
157	Cut depth override in composite fixed cycle G71 and G72	
158	Spark out frequency in thread cutting cycle G76	
159		
160	Acceleration / deceleration starting speed	mm/min
161		
162	JOG speed of Q and Z setter	mm/min
163		
164		

No.	Description	Standard value
165		
166		
167		
168		
169		
170	Feedback detection ratio (X)	
171	Feedback detection ratio (Z)	
172	Feedback detection ratio (3rd)	
173	Feedback detection ratio (4th)	
174		
175		
176	Macro (09010) call G code	
177	Macro (09011) call G code	
178	Macro (09012) call G code	
179	Macro (09013) call G code	
180	Macro (09014) call G code	
181	Macro (09015) call G code	
182	Macro (09016) call G code	
183	Macro (09017) call G code	
184	Macro (09018) call G code	
185	Macro (09019) call G code	—
186	Non buffering M code 1	
187	ditto 2	
188	ditto 3	
189	ditto 4	
190		
191		
192		
193		
194		
195		

No.	Description	Standard value
1000	Pitch error compensation (X)	
1001	Reference point parameter No. (Z)	
1002		
1003		
1004		
1100	Pitch error compensation interval (X)	
1101	Pitch error compensation interval (Z)	
1102		
1103		
1104		
2000	Pitch error compensation data (X)	
∫		
2149		
3000	Pitch error compensation data (Z)	
∫		
3149		
4000		
∫		
4149		

No.	Description	Standard value
5000		
⎫		
⎭		
5149		
JV1F	Contents jog speed	
1E	" " "	
1D	" " "	
1C	" " "	
1B	" " "	
1A	" " "	
19	" " "	
18	" " "	
17	" " "	
16	" " "	
15	" " "	
14	" " "	
13	" " "	
12	" " "	
11	" " "	
10	" " "	
0F	" " "	
0E	" " "	
0D	" " "	
0C	" " "	
0B	" " "	
0A	" " "	
09	" " "	
08	" " "	
07	" " "	
RV00	Rapid traverse override	
01	" " "	
10	" " "	
11	" " "	

No.	Description
300	EIA code representing [is entered as the perforation pattern.
301	EIA code representing] is entered as the perforation pattern.
302	EIA code representing # is entered as the perforation pattern.
303	EIA code representing * is entered as the perforation pattern.
304	EIA code representing = is entered as the perforation pattern.

No.	Bit	Description
305	0	Baud rates 4800 110 200 300 600 1200 2400 4800 9600 19200
		0 1 0 1 0 1 0 1 0 1
	1	0 0 1 1 0 0 1 1 0 0
	2	0 0 0 0 1 1 1 1 0 0
	3	0 0 0 0 0 0 0 0 1 0
	4	Stop bit in I/O devices 1 (1: 1bit 0: 2bit)
	5	ditto 2 (ditto)
	6	
	7	
306	0	Baud rates
	1	ditto
	2	
	3	
	4	Control codes (DC1 thru DC4) in I/O devices 1 (1:Not 0:Used)
	5	ditto 2 (ditto)
	6	
	7	

No.	Bit	· Description
317	0	Baud rates
	1	ditto
	2	
	3	
	4	Stop bit in I/O devices (1 : 1bit 0 : 2bit)
	5	Control codes (DC1 thru DC4) in I/O devices (1: Not 0: Used)
	6	
	7	

(13) PC (M16Ⅱ) I/O

M16Ⅱ Input/Output Relay

Name	No.	Application	Relay No.	7	6	5	4	3	2	1	0	Real Address
I/O RELAY OR AUXILIARY RELAY	256		000									C000
			001									1
			002									2
			003									3
			004									4
			005									5
			006									6
			007									7
			008									8
			009									9
			010									A
			011									B
			012									C
			013									D
			014									E
			015									F
			016									C010
			017									1
			018									2
			019									3
			020									4
			021									5
			022									6
			023									7
			024									8
			025									9
			026									A
			027									B
			028									C
			029									D
			030									E
			031									F
			032									C020
			033									1
			034									2
			035									3
			036									4
			037									5
			038									6
			039									7
			040									8

Name	No.	Application	Relay No.									Real Address
				7	6	5	4	3	2	1	0	
I/O RELAY OR AUXILIARY RELAY	256		041									9
			042									A
			043									B
			044									C
			045									D
			046									E
			047									F
			048									C030
			049									1
			050									2
			051									3
			052									4
			053									5
			954									6
			055									7
			056									8
			057									9
			058									A
			059									B
			060									C
			061									D
			062									E
			063									F
			064									C040
			065									1
			066									2
			067									3
			068									4
			069									5
			070									6
			071									7
			072									8
			073									9
			074									A
			075									B
			076									C
			077									D
			078									E
			079									F
			080									C050
			081									1

Name	No.	Application	Relay No.									Real Address
				7	6	5	4	3	2	1	0	
I/O RELAY OR AUXILIARY RELAY	256		082									2
			083									3
			084									4
			085									5
			086									6
			087									7
			088									8
			089									9
			090									A
			091									B
			092									C
			093									D
			094									E
			095									F
			096									C060
			097									1
			098									2
			099									3
			100									4
			101									5
			102									6
			103									7
			104									8
			105									9
			106									A
			107									B
			108									C
			109									D
			110									E
			111									F
			112									C070
			113									1
			114									2
			115									3
			116									4
			117									5
			118									6
			119									7
			120									8
			121									9
			122									A

Name	No.	Appli-cation	Relay No.									Real Address
				7	6	5	4	3	2	1	0	
I/O RELAY OR AUXILIARY RELAY	256		123									B
			124									C
			125									D
			126									E
			127									F
			128									C080
			129									1
			130									2
			131									3
			132									4
			133									5
			134									6
			135									7
			136									8
			137									9
			138									A
			139									B
			140									C
			141									D
			142									E
			143									F
			144									C090
			145									1
			146									2
			147									3
			148									4
			149									5
			150									6
			151									7
			152									8
			153									9
			154									A
			155									B
			156									C
			157									D
			158									E
			159									F
			160									C0A0
			161									1
			162									2
			163									3

Name	No.	Appli-cation	Relay No.									Relay Address
				7	6	5	4	3	2	1	0	
I/O RELAY OR AUXILIARY RELAY	256		164									4
			165									5
			166									6
			167									7
			168									8
			169									9
			170									A
			171									B
			172									C
			173									D
			174									E
			175									F
			176									COBO
			177									1
			178									2
			179									3
			180									4
			181									5
			182									6
			183									7
			184									8
			185									9
			186									A
			187									B
			188									C
			189									D
			190									E
			191									F
			192									COCO
			193									1
			194									2
			195									3
			196									4
			197									5
			198									6
			199									7
			200									8
			201									9
			202									A
			203									B
			204									C

Name	No.	Appli-cation	Relay No.									Relay Address
				7	6	5	4	3	2	1	0	
I/O RELAY OR AUXILIARY RELAY	256		205									D
			206									E
			207									F
			208									COD0
			209									1
			210									2
			211									3
			212									4
			213									5
			214									6
			215									7
			216									8
			217									9
			218									A
			219									B
			220									C
			221									D
			222									E
			223									F
			224									COE0
			225									1
			226									2
			227									3
			228									4
			229									5
			230									6
			231									7
			232									8
			233									9
			234									A
			235									B
			236									C
			237									D
			238									E
			239									F
			240									COF0
			241									1
			242									2
			243									3
			244									4
			245									5

Name	No.	Appli-cation	Relay No.									Relay Address
				7	6	5	4	3	2	1	0	
I/O RELAY OR AUXILIARY RELAY			246									6
			247									7
			248									8
			249									9
			250									A
			251									B
			252									C
			253									D
			254									E
			255									F
AUXILIARY RELAY	256		256									C100
			257									1
			258									2
			259									3
			260									4
			261									5
			262									6
			263									7
			264									8
			265									9
			266									A
			267									B
			268									C
			269									D
			270									E
			271									F
			272									C110
			273									1
			274									2
			275									3
			276									4
			277									5
			278									6
			279									7
			280									8
			281									9
			282									A
			283									B
			284									C
			285									D
			286									E

Name	No.	Application	Relay No.									Relay Address
				7	6	5	4	3	2	1	0	
AUXILIARY RELAY	256		287									F
			288									C120
			289									1
			290									2
			291									3
			292									4
			293									5
			294									6
			295									7
			296									8
			297									9
			298									A
			299									B
			300									C
			301									D
			302									E
			303									F
			304									C130
			305									1
			306									2
			307									3
			308									4
			309									5
			310									6
			311									7
			312									8
			313									9
			314									A
			315									B
			316									C
			317									D
			318									E
			319									F
			320									C140
			321									1
			322									2
			323									3
DGNS (NC) 1	224	Output to NC	324									4
2			325									5
3			326									6
4			327									7

Name	No.	Application	Relay No.									Relay Address
				7	6	5	4	3	2	1	0	
DGNS 5 (NC)		Output to NC	328									8
6			329									9
7			330									A
8			331									B
9			332									C
10			333									D
11			334									E
12			335									F
13			336									C150
14			337									1
15			338									2
16			339									3
17			340									4
18			341									5
19			342									6
20			343									7
21			344									8
22			345									9
23			346									A
24			347									B
25			348									C
26			349									D
27			350									E
28			351									F
DGNS 33 (NC)	160	Input from NC	352									C160
34			353									1
35			354									2
36			355									3
37			356									4
38			357									5
39		M function	358	M28	M24	M22	M21	M18	M14	M12	M11	6
40			359	M48	M44	M42	M41	M38	M34	M32	M31	7
41		T function	360	T28	T24	T22	T21	T18	T14	T12	T11	8
42			361	T48	T44	T42	T41	T38	T34	T32	T31	9
43		S function	362	R08	R07	R06	R05	R04	R03	R02	R01	A
44		B function	363	B18	B14	B12	B11	R12	R11	R10	R09	B
45			364	B38	B34	B32	B31	B28	B24	B22	B21	C
46			365									D
47			366									E
48			367									F
49			368									C170

Name	No.	Application	Relay No.	7	6	5	4	3	2	1	0	Relay Address
DGNS 50 (NC) 51 52			369									1
			370									2
			371									3
Option	96	Machining monitoring	372									4
			373									5
			374									6
			375									7
			376									8
			377									9
			378									A
			379									B
			380									C
			381									D
			382									E
			383									F
	8	Special	384									C180
Option	120	Machine mode	385									1
			386									2
			387									3
			388									4
			389									5
			390									6
			391									7
			392									8
			393									9
			394									A
			395									B
			396									C
			397									D
			398									E
			399									F
Used by SETOUT	64	Forced Output area	400									C190
			401									1
			402									2
			403									3
			404									4
			405									5
			406									6
			407									7
			408									8
			409									9

Name	No.	Application	Relay No.									Relay Address
				7	6	5	4	3	2	1	0	
Option	256	Machining monitoring	410									A
			411									B
			412									C
			413									D
			414									E
			415									F
			416									C1A0
			417									1
			418									2
			419									3
			420									4
			421									5
			422									6
			423									7
			424									8
			425									9
			426									A
			427									B
			428									C
			429									D
			430									E
			431									F
			432									C1B0
			433									1
			434									2
			435									3
			436									4
			437									5
			438									6
			439									7
			440									8
	64	Timer	441									9
			442									A
			443									B
			444									C
			445									D
			446									E
			447									F
			448									C1C0
			449									1
			450									2

PC PARAMETERS
1-16 BELOW LEFT

Name	No.	Application	Relay No.	7	6	5	4	3	2	1	0	Relay Address
AUXILIARY RELAY	192		451									3
			452									4
			453									5
			454									6
			455									7
			456									8
			457									9
			458									A
			459									B
			460									C
			461									D
			462									E
			463									F
			464									C1D0
			465									1
			466									2
			467									3
			468									4
			469									5
			470									6
			471									7
			472									8
PARAM 1 (TABLE) 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	128	Parameter	473									9
			474									A
			475									B
			476									C
			477									D
			478									E
			479									F
			480									C1E0
			481									1
			482									2
			483									3
			484									4
			485									5
			486									6
			487									7
		Special	488									8
	16	A/D	489									9
			490									A
			491									B

Name	No.	Application	Relay No.									Relay Address
				7	6	5	4	3	2	1	0	
	64	Latch	492									C
			493									D
			494									E
			495									F
			496									C1F0
			497									1
			498									2
	8	Error	499									3
	96	Alarm message	500									4
			501									5
			502									6
			503									7
			504									8
			505									9
			506									A
			507									B
			508									C
			509									D
			510									E
			511									F

BATTERY BACK UP AREA: 3850 ~ 3997 (C181 ~ C18FH)
4650 ~ 4887 (C1D1 ~ C1E8H)
4910 ~ 4987 (C1EB ~ C1F2H)
5000 ~ 5117 (C1F4 ~ C1FFH)

(Note) If you press MANUAL keys on the INOUT screen, you can rewrite the contents of the contacts.

[Caution] Press the emergency stop before executing this mode.

(14) Power supply

(14-1) AC 200/220V (50/60Hz)

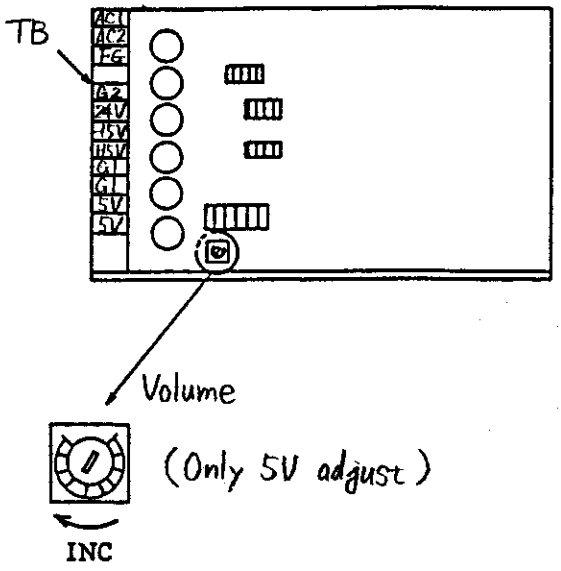
- The primary voltage of the machine cabinet must be AC200V or AC220V. These voltages are best.
- The voltages between AC200 and AC220 are better.
- The out of the range is no good.

(14-2) Earth

The earth line of the machine cabinet must be connected with the earth of the factory. If there is no earth line, we can't guarantee the machine.

(14-3) Power adjustment

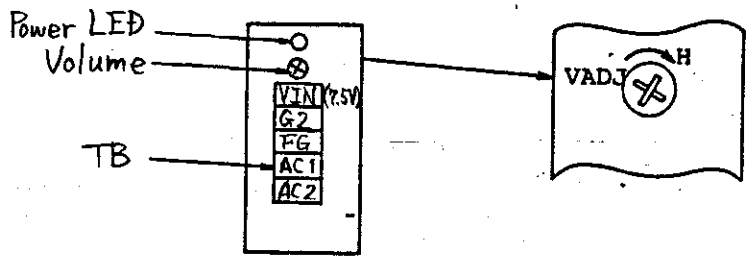
(KS170-02)



Power Supply	Tolerance	Check Point
+5V	5.1~5.2	+5V - G1
+15V	14.3~16.5	+15V - G1
-15V	-14.3~-16.5	-15V - G1
+24V	22.8~25.2	24V - G2

On the P.C.B.

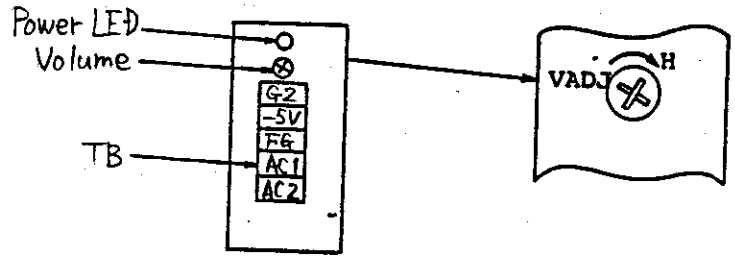
(PS50-7R5F)



Power Supply	Tolerance	Check Point
+7.5V	7.5~8.0	+7.5 - G2

On the P.C.B.

(PS10-05F)



Power Supply	Tolerance	Check Point
-5V	-4.8~-5.2	-5V - G2

On the P.C.B.

Power Supply	Tolerance	Check Point
Battery	2.9V~	BY1 - G1

(15) Exchanging

(15-1)

S16Ⅱ (01-04-02/01-04-03) P.C.B.

(1) Transmit programs, parameters, work offsets and tool offsets from the old P.C.B. to the tape puncher. (Cf: P9-11)

(2) Check short pins and switches on the new P.C.B.. (Cf: P3-2, P3-3)

(3) Change the P.C.B..

(4) Execute the ODF function on the TAPE IN screen. (Cf: P9-11)

(5) Receive datum from the tape reader to the new P.C.B.. (Cf: P9-11)

※ <NOTE> Check P-ROM on the P.C.B & Be careful about the cable connection !! (cf: P3-1, P15-3)

(15-2)

Servo I/F (01-05-02/01-05-03) P.C.B.

(1) Check short pins and switches on the new P.C.B.. (Cf: P4-2, P4-6)

(2) Change the P.C.B..

(3) Check the command counters and the error counters on the DIAGNOSTIC screen. And adjust them for each axis by turning the volumes in front of the servo amplifier unit. (Cf: P5-7)

※ <NOTE> Check. how many KM3701, KM3702, DAC. on the P.C.B (cf. P4-1) (cf. P4-5)

(15-3)

M16Ⅱ (00-10-14) P.C.B.

(1) Transmit sequence programs, parameters (TABLE) and SL_BUS datum from the old P.C.B. to the cassette. (Cf: P9-17)

(2) Change the P.C.B..

(3) Receive datum from the cassette to the new P.C.B.. (Cf: P9-17)

(4) Set the AB_Phase datum for the ATC (M/C). In this case, the current counter must be set to '1' on the AB_PHASE screen, after bringing POT NO 1. at ATC position. (Cf: P9-15)

(6) If any alarm happens, check the Ladder and clear any alarm.
If you can't clear alarms, execute MANUAL mode on the INOUT screen and rewrite the contents of the contacts. (cf: P9-13)
[Caution] Press the emergency stop before executing MANUAL.

(15-4)

Slaves (SMCN-2B) P.C.B.

(1) Check dip switches. (cf: P6-~~4~~) 3, 5)

(2) Change the P.C.B.

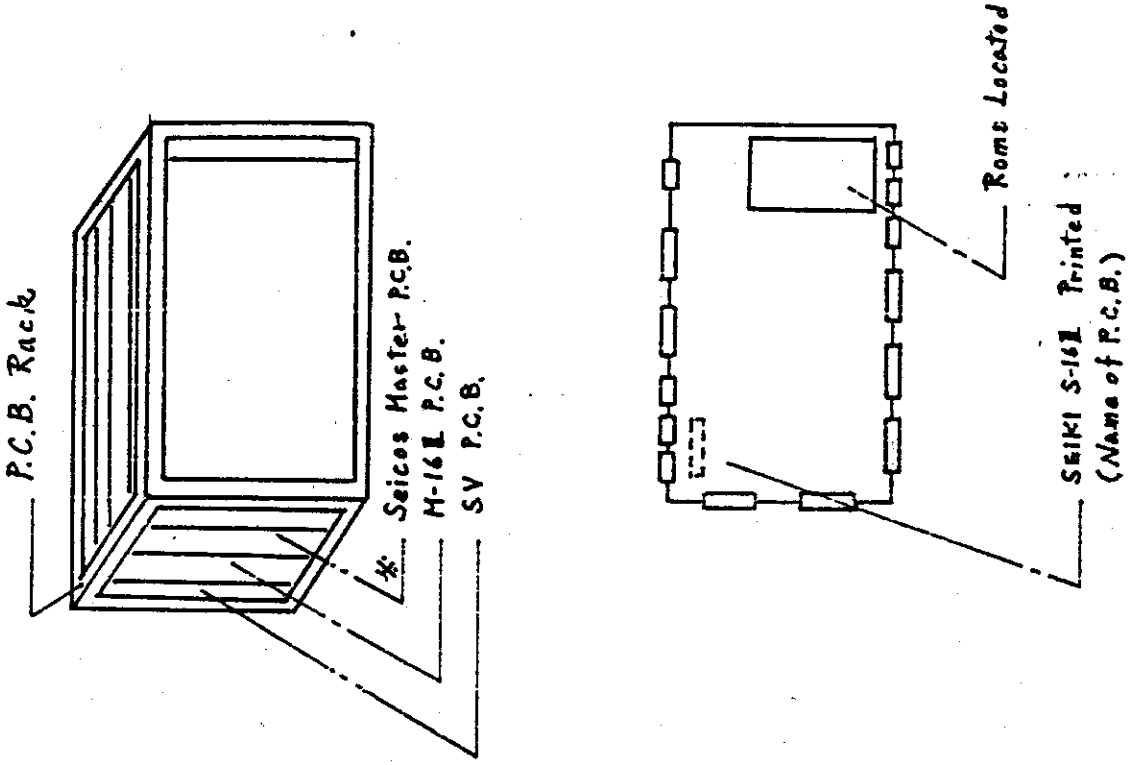
(15-5)

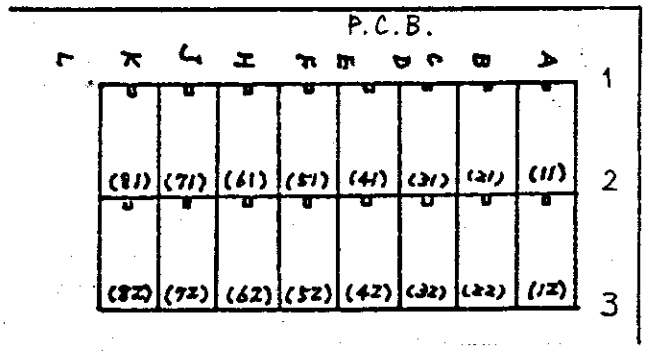
Servo. Amplifier.

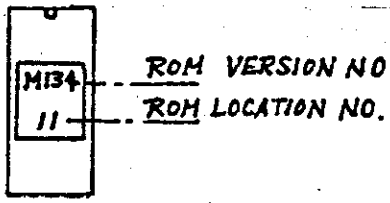
(1) Check Dip switches (cf: P5-9, P5-10)

(2) Check Short pins (cf: P5-10, P5-11)

(15-6) How to change SEICOS ROMs.







(Note) Check ROM direction, before press it ROM-Socket on.

(Note)

In case of SEICOS-L, 16 ROMs are used. Their number for the P.C.B. <01-04-02> is L01XX, and one for the P.C.B. <01-04-03> is L02XX.

In case of SEICOS-M, 10 or 12 ROMs are used. Their numbers are M01XX and M02XX.