

ELECTRICAL SCHEMATIC & PNEUMATIC CIRCUIT

**PEGA-304050 KING
(AMADAN-04P-C)**

TCUI(A)

AMADA

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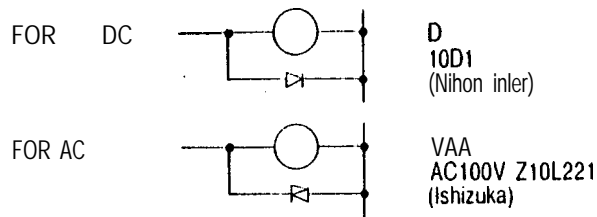
*: Option for TCU1

* * : Option for TCU2

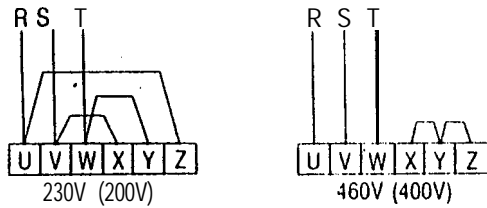
To check the electrical parts in the printed circuit board TCU1 and TCU2, see the parts list on page 64 and the subsequent pages.

CAUTIONS

Note 1: Following noise suppressors shall be used unless otherwise specified:
(Electrical enclosure)



Note 2: Press motor (m1) and blower motor (m17) shall be connected as shown below:



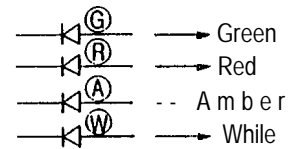
Note 3: Capacities of resistors and capacitors described in diagrams are as follows:
(Electrical enclosure)

r1	1.2 k Ω 1W	C1	6800 μ F 63WV
r2	3.3 k Ω 1/2W	C2	6 μ F (Built in fan)
r3, 4	100 Ω 20W	C4	2200 μ F 50WV
r9, 10	400 Ω 5W		
r11	1 k Ω 2W		

Note 4: Noise suppressors described in diagrams are as follows:

SK1	DCR2-50A22
	0.5 μ F 200V \pm 10% 1W (Marucon)
SK2	RFM2H664KPD
	0.22 μ F x 3 4752220% 6W (Marucon)

Note 5: Colors of LEDs described in diagrams are as follows:



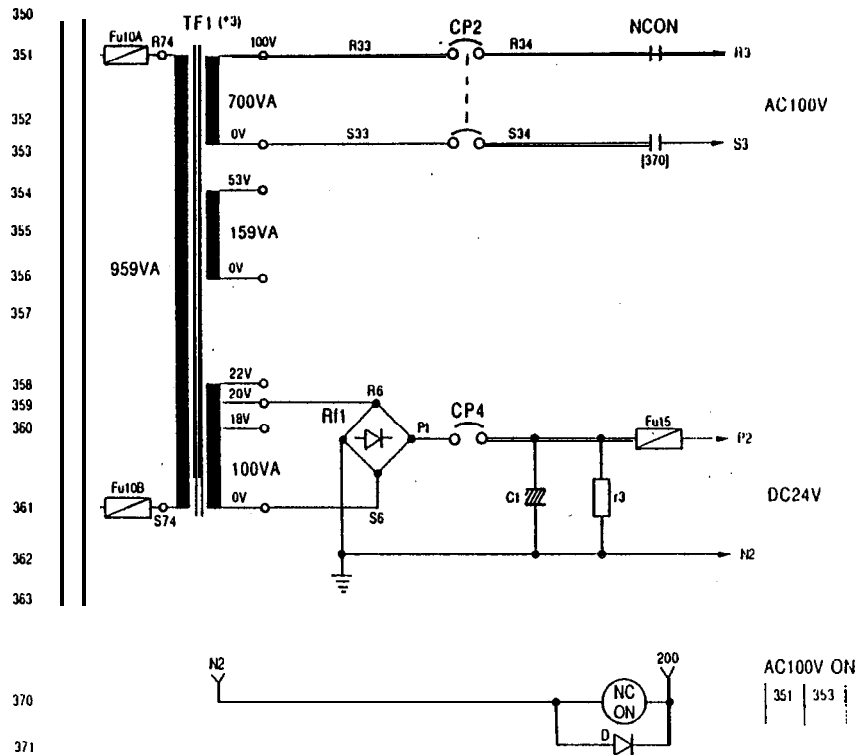
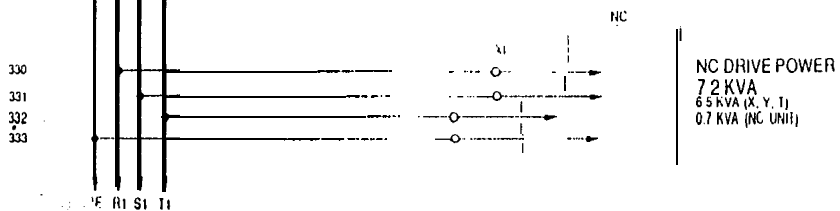
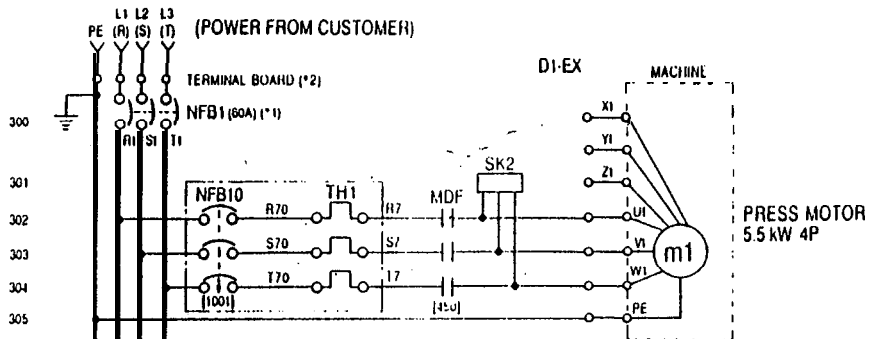
Note 6: Following connectors shall be provided with a through hole for checking (printed circuit board)

M1, M2, M18, M20, TM1, TM2, MP [TCU1]

M19, M61, M62, M78, M79, TM50, LUL1, LUL2 [TCU2]

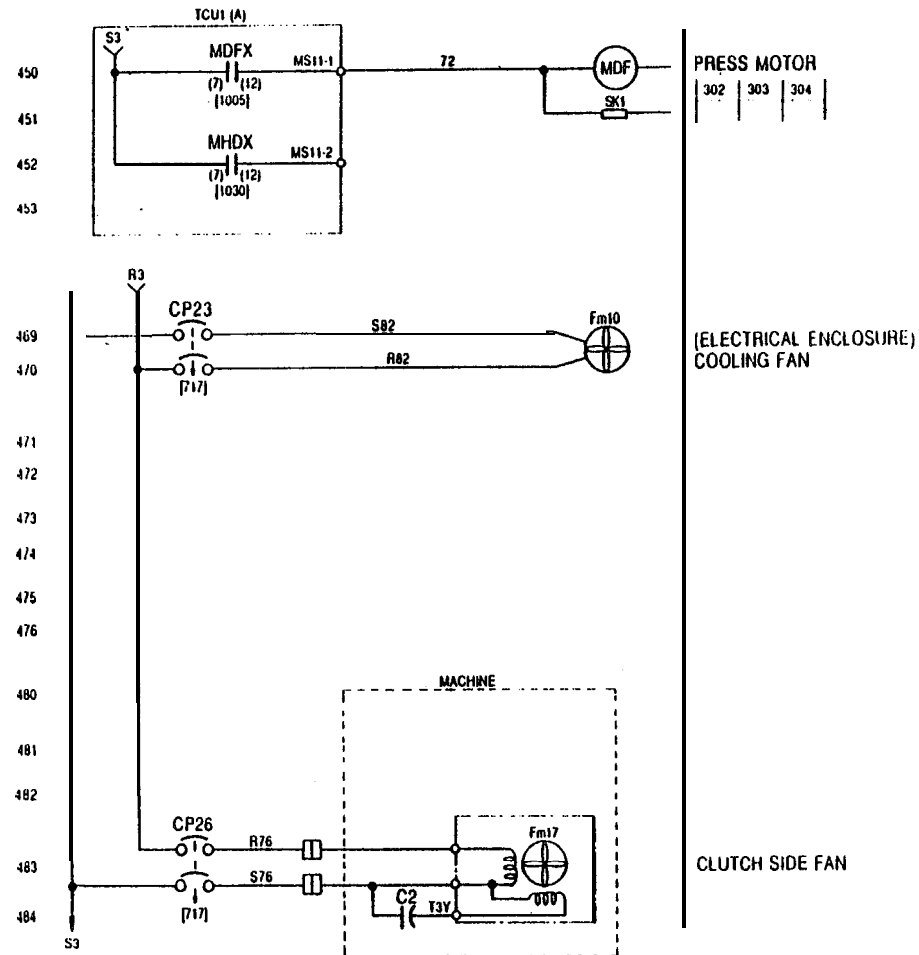
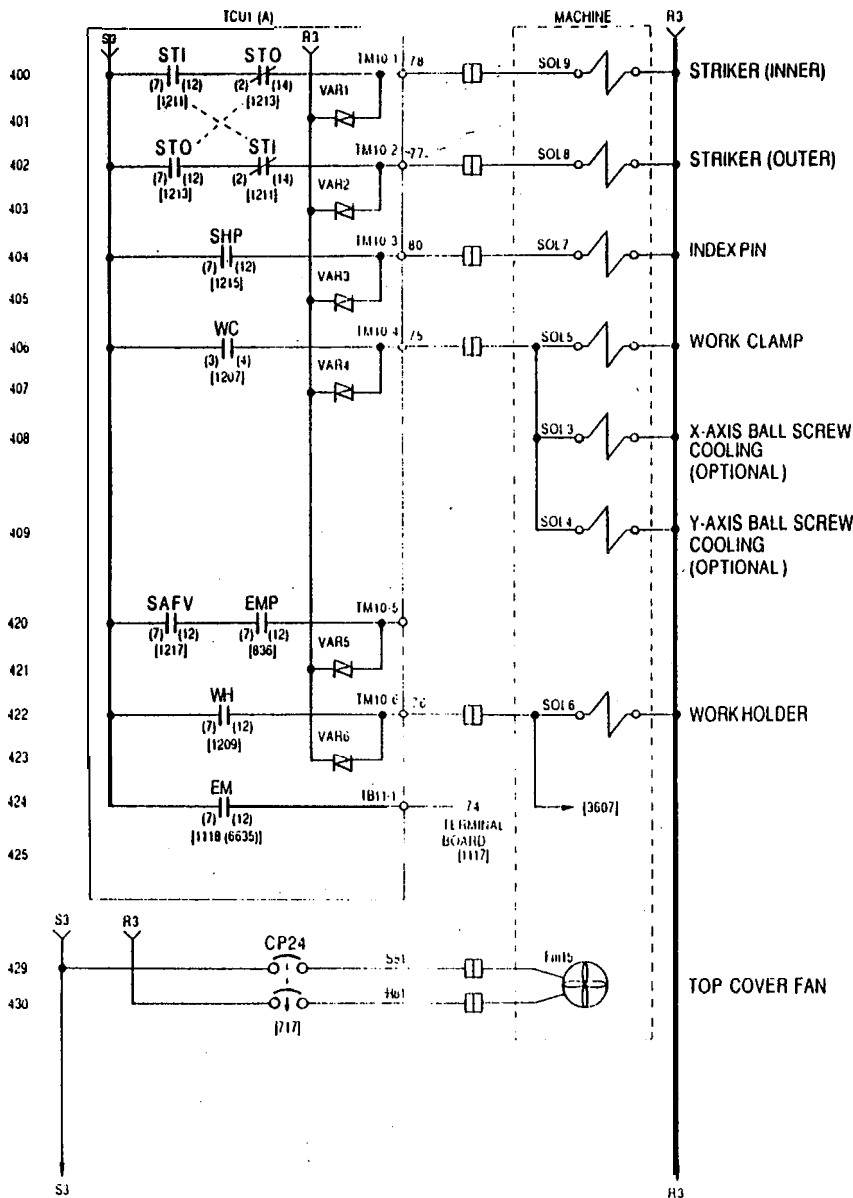
(Refer to 'Check through hole' on page 26 and page 40.)

POWER SUPPLY CIRCUIT

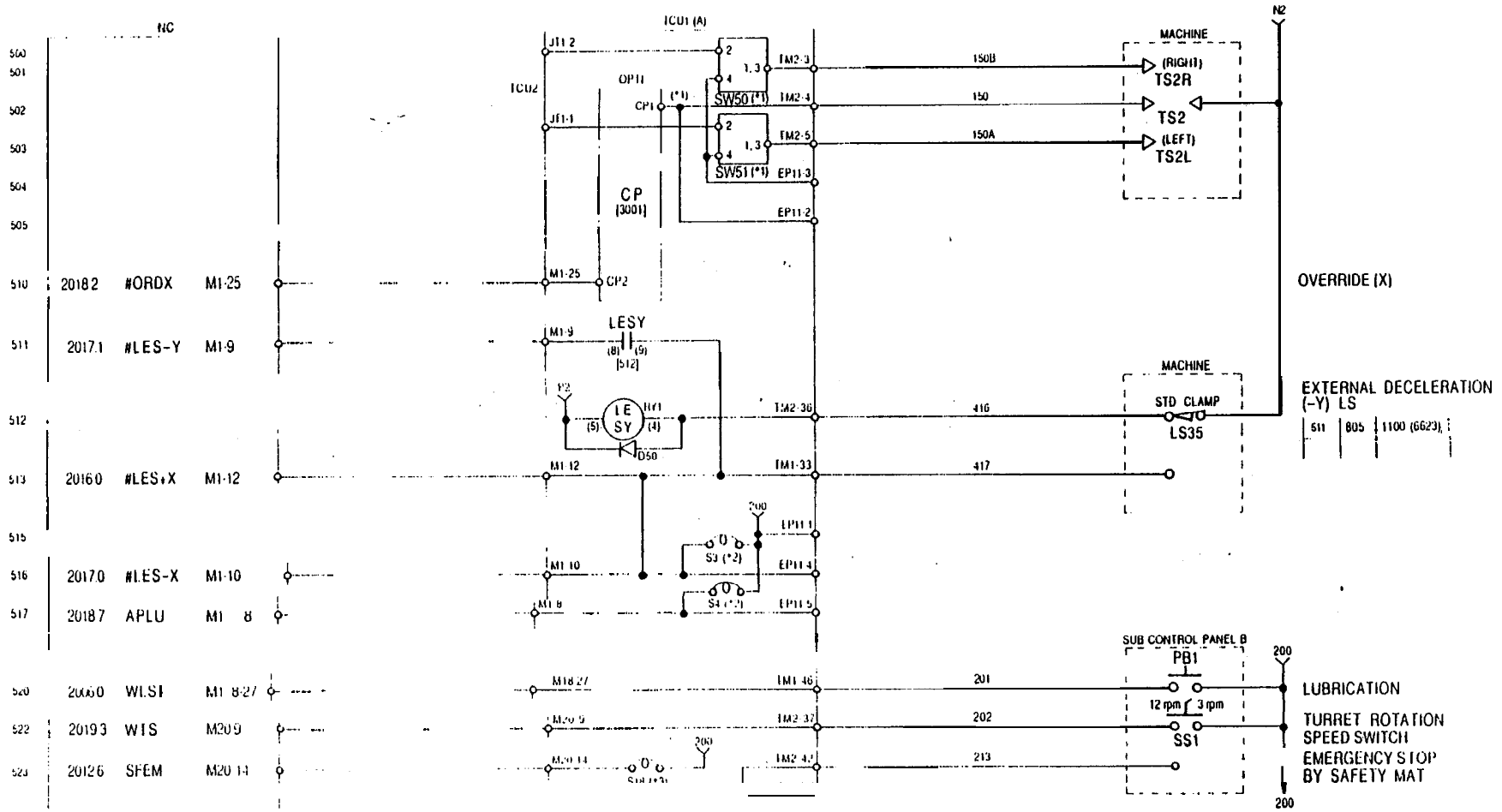


- *1 If L-UL is equipped, 100 A NFB shall be used instead of 60-A NFB.
- *2 Size of terminal: Standard M6.
When L-UL is equipped ... M8
- *3: When a power outlet is equipped, TF1 is replaced by TF20 and Fu10 is replaced by Fu16

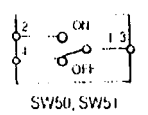
100VAC CIRCUIT



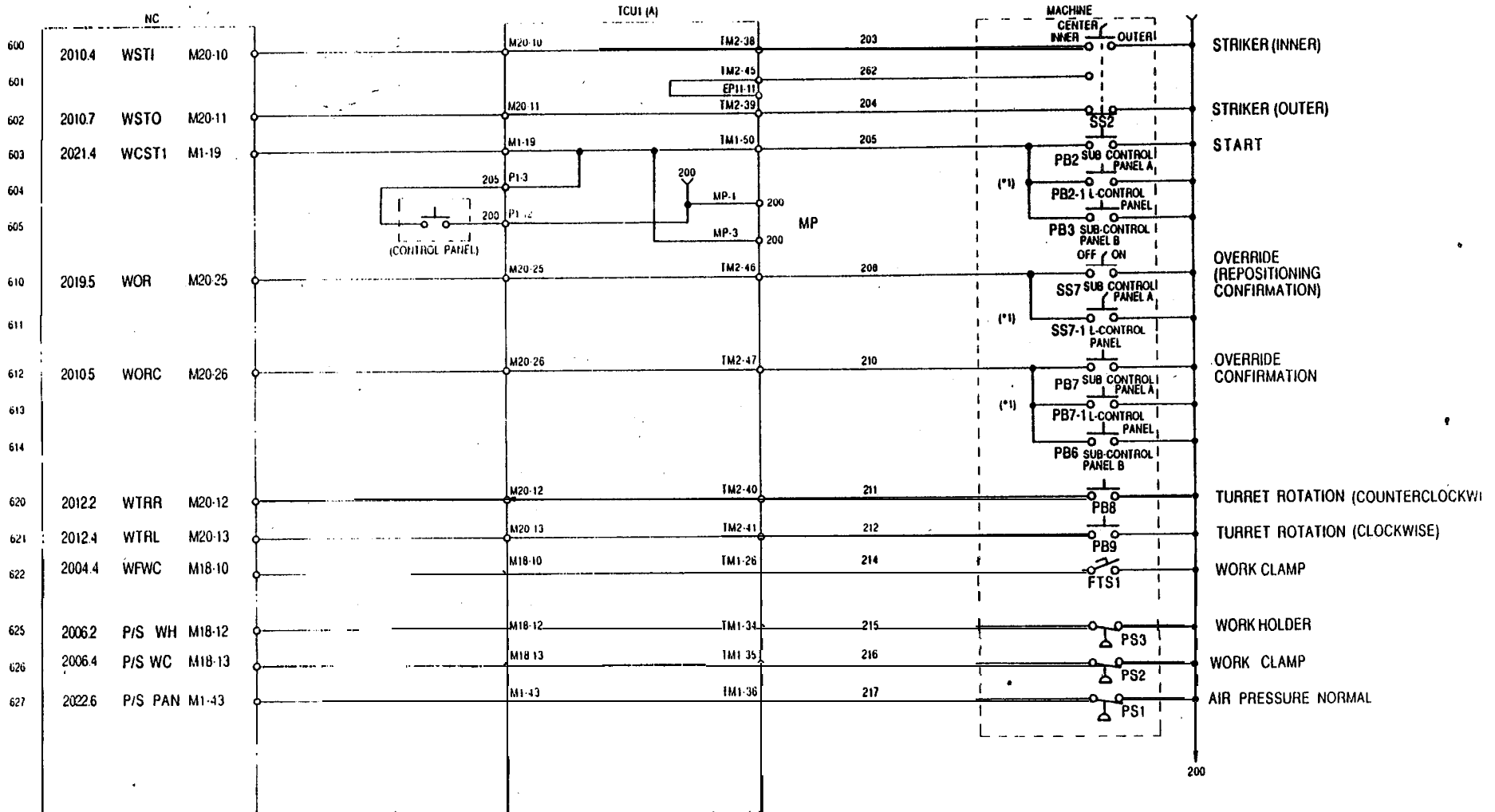
NC INPUT SIGNAL 1



*1. SW50 and SW51 shall be set at off position.
 *2. Have S3 and S4 short-circuited.
 *3. Have S18 short-circuited.

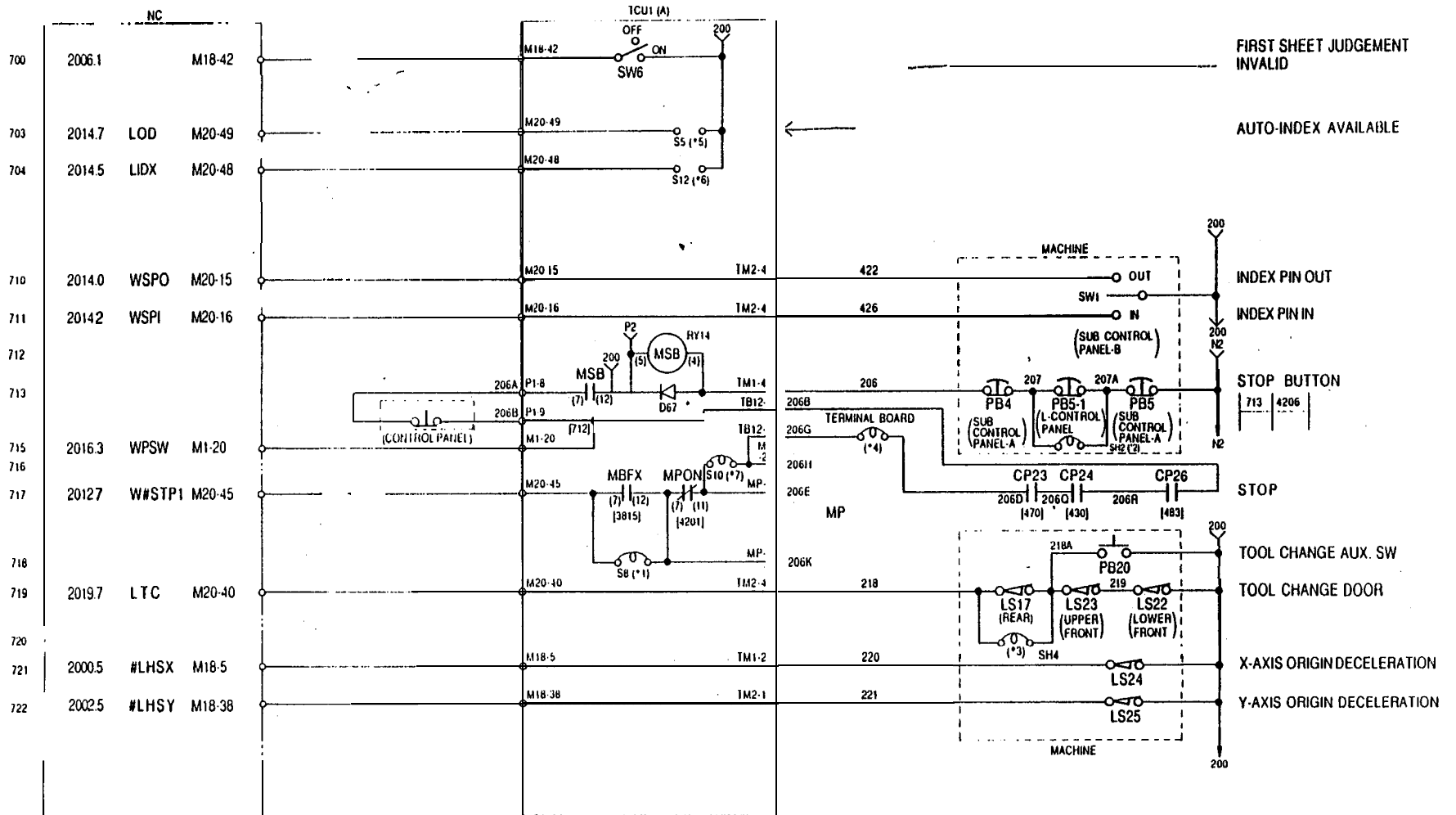


NC INPUT SIGNAL 2



*1: If L-UL is equipped, have carriage switched over to L control panel

NC INPUT SIGNAL 3



FIRST SHEET JUDGEMENT INVALID

AUTO-INDEX AVAILABLE

INDEX PIN OUT

INDEX PIN IN

STOP BUTTON

STOP

TOOL CHANGE AUX. SW

TOOL CHANGE DOOR

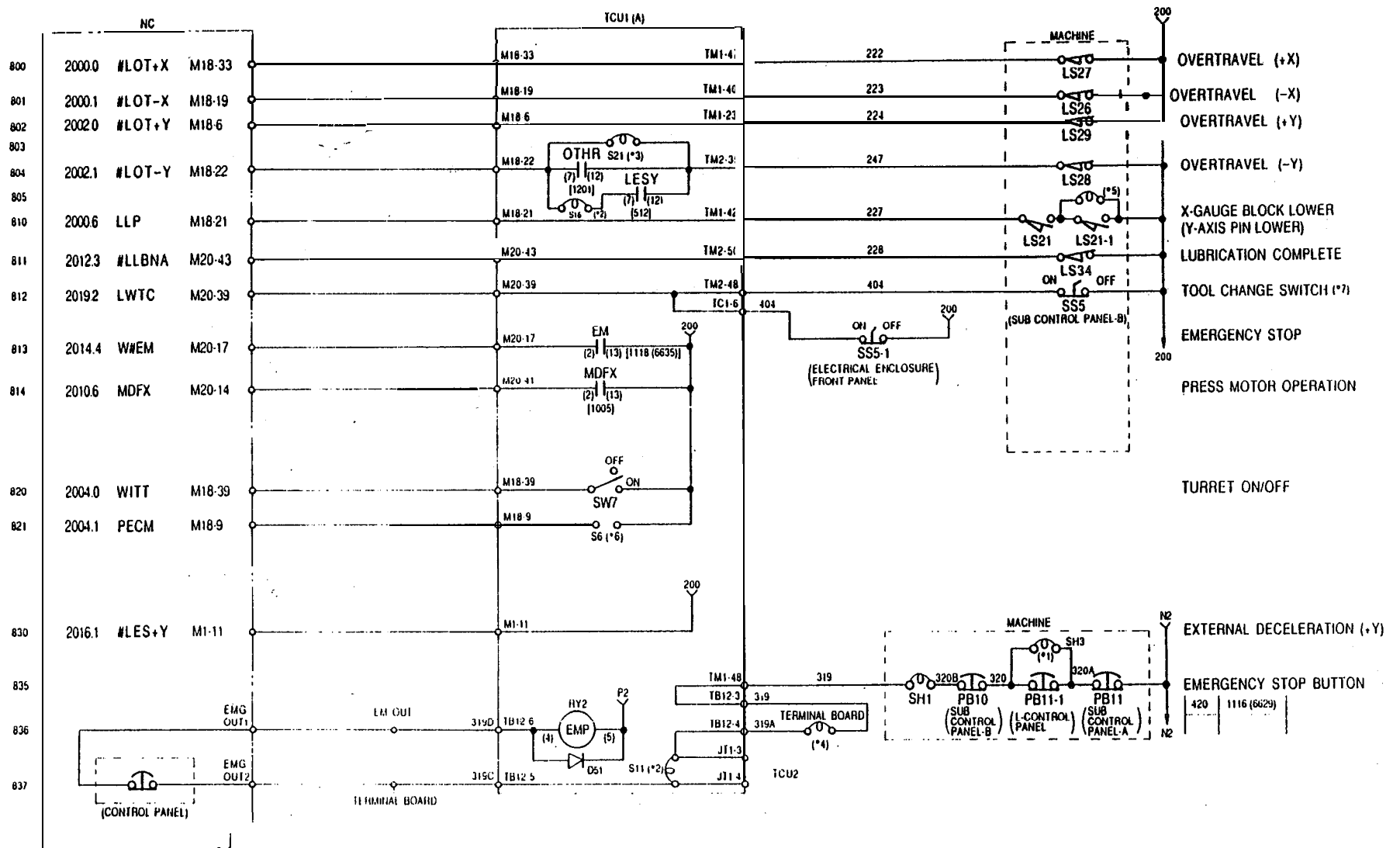
X-AXIS ORIGIN DECELERATION

Y-AXIS ORIGIN DECELERATION

- *1: Have S8 opened
- *2: This shall be opened when L-UL is activated
- *3: Have SH4 opened.
- *4: Normally this is short-circuited.
- 5: Have S5 short-circuited when DNC is equipped
- 6: Have S12 short-circuited when AUTO INDEX device is equipped
- *7: Have S10 short-circuited except when MP connector is connected

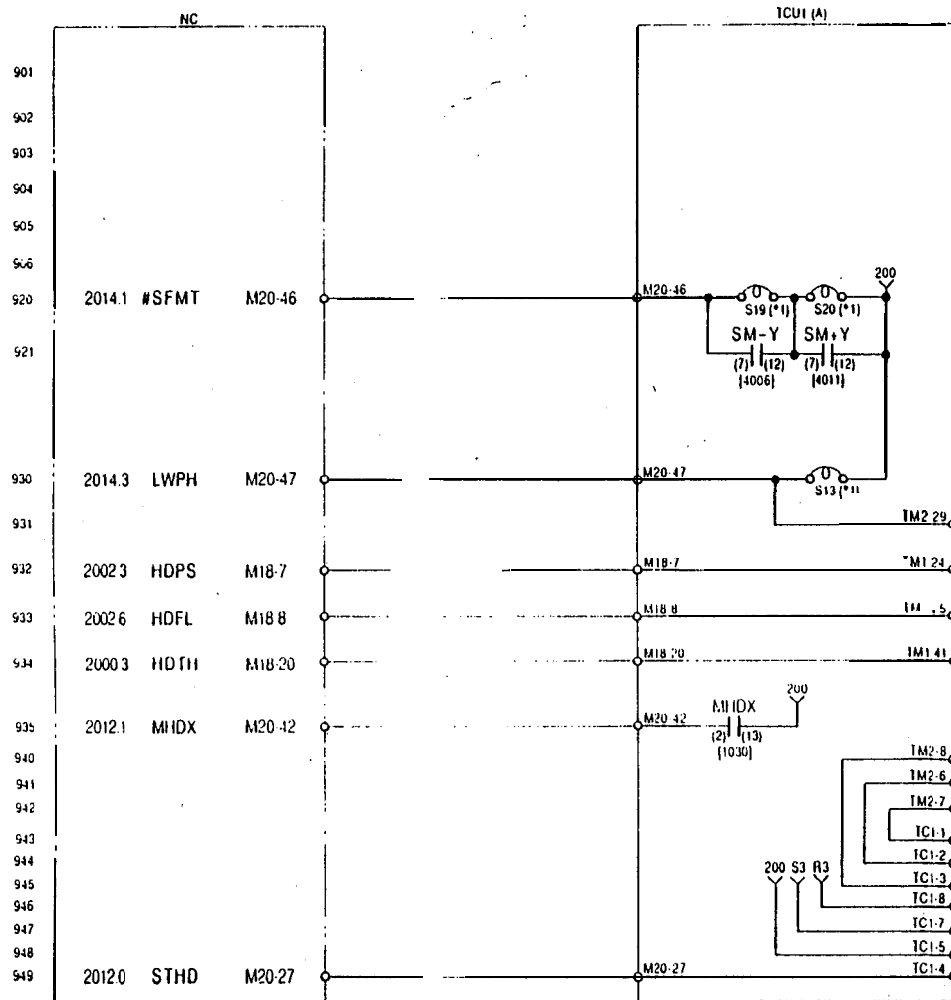
1-9

NC INPUT SIGNAL 4



- *1: This shall be opened when L-UL is equipped
- *2: Have S11 and S16 short-circuited:
 - S21 opened
- *4: Have this terminal short-circuited
- 5: This shall be short-circuited except when Y-axis pins mounted
- *6: Have S6 short-circuited.
- *7: For the machine to be exported to Europe, this SW shall be installed on the front of electrical enclosure, but otherwise onto sub-control panel

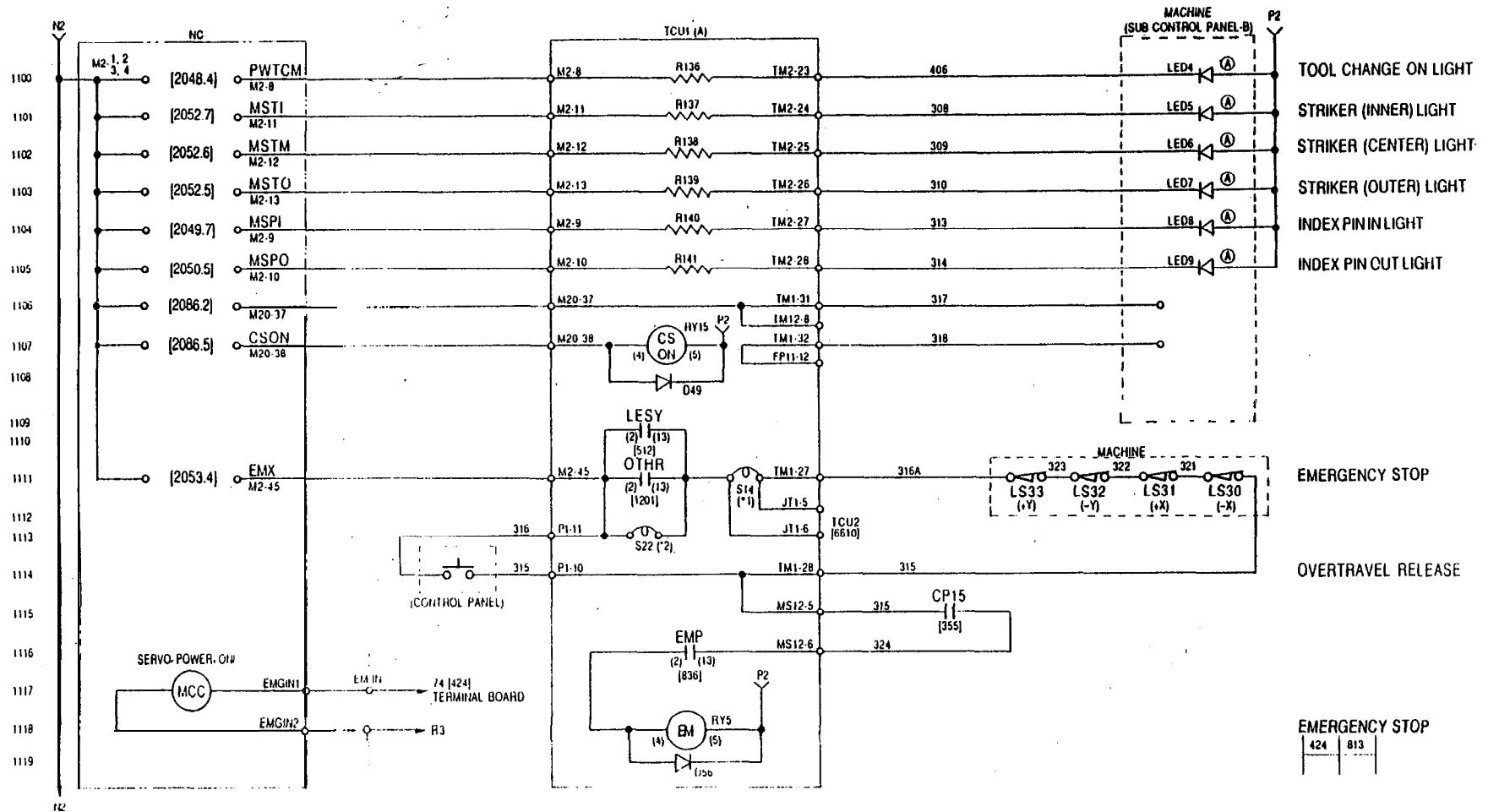
NC INPUT SIGNAL 5



SAFETY MAT CONFIRMATION

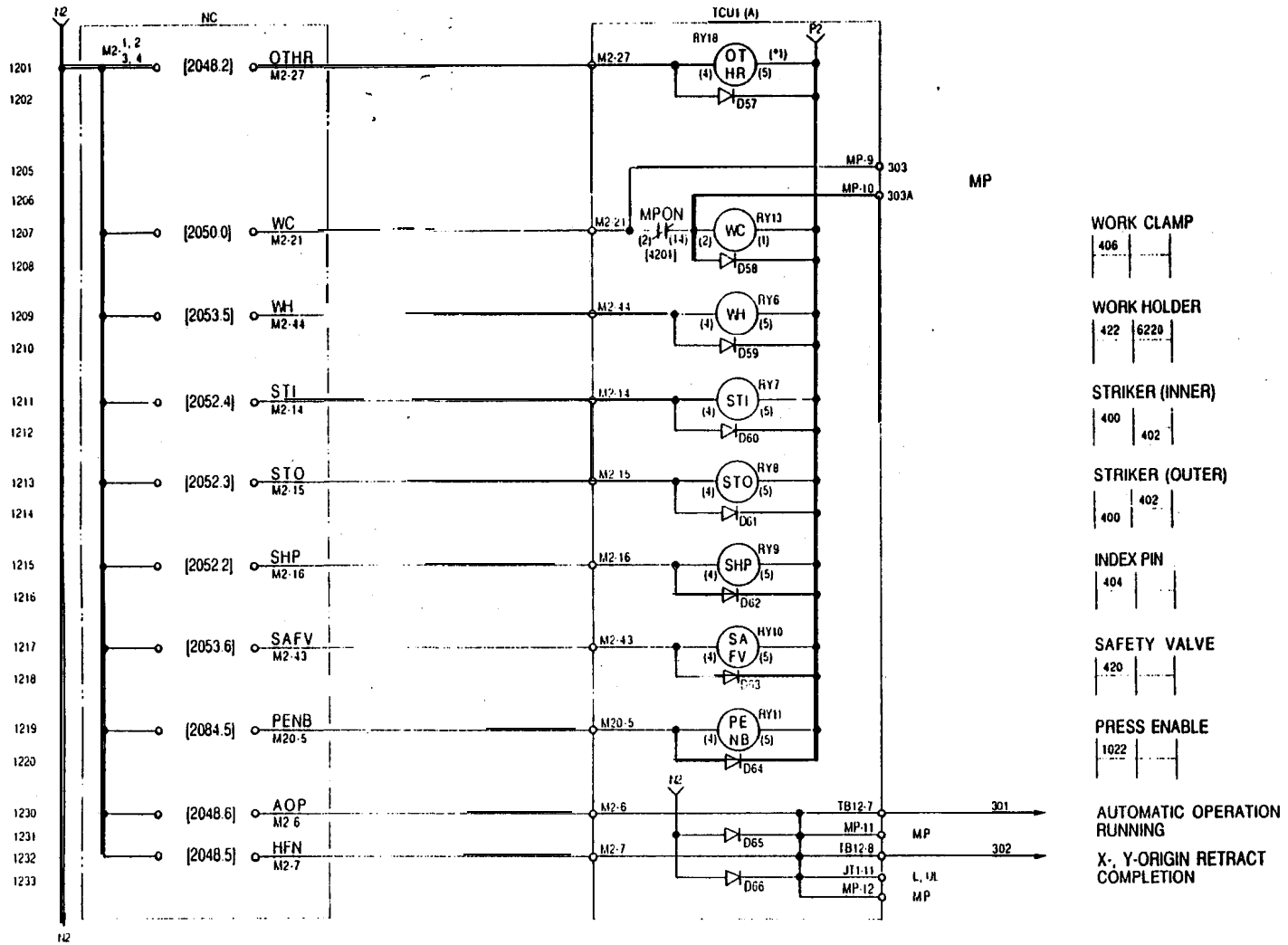
*1: Normally S13, S19 and S20 are short-circuited

NC OUTPUT SIGNAL 2



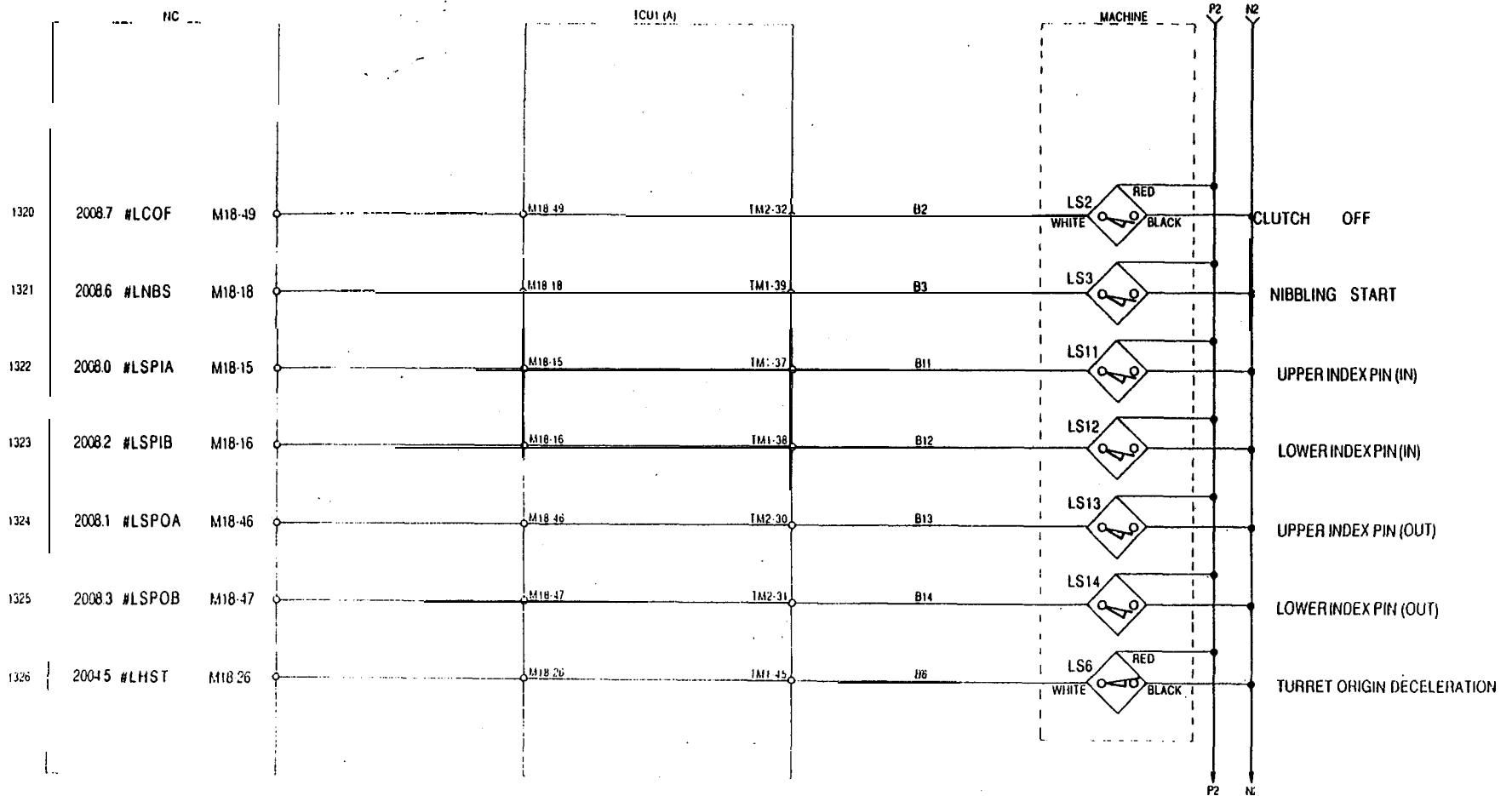
*1: Have S14 short-circuited
 ● 2: Have S22 short-circuited.

NC OUTPUT SIGNAL 3

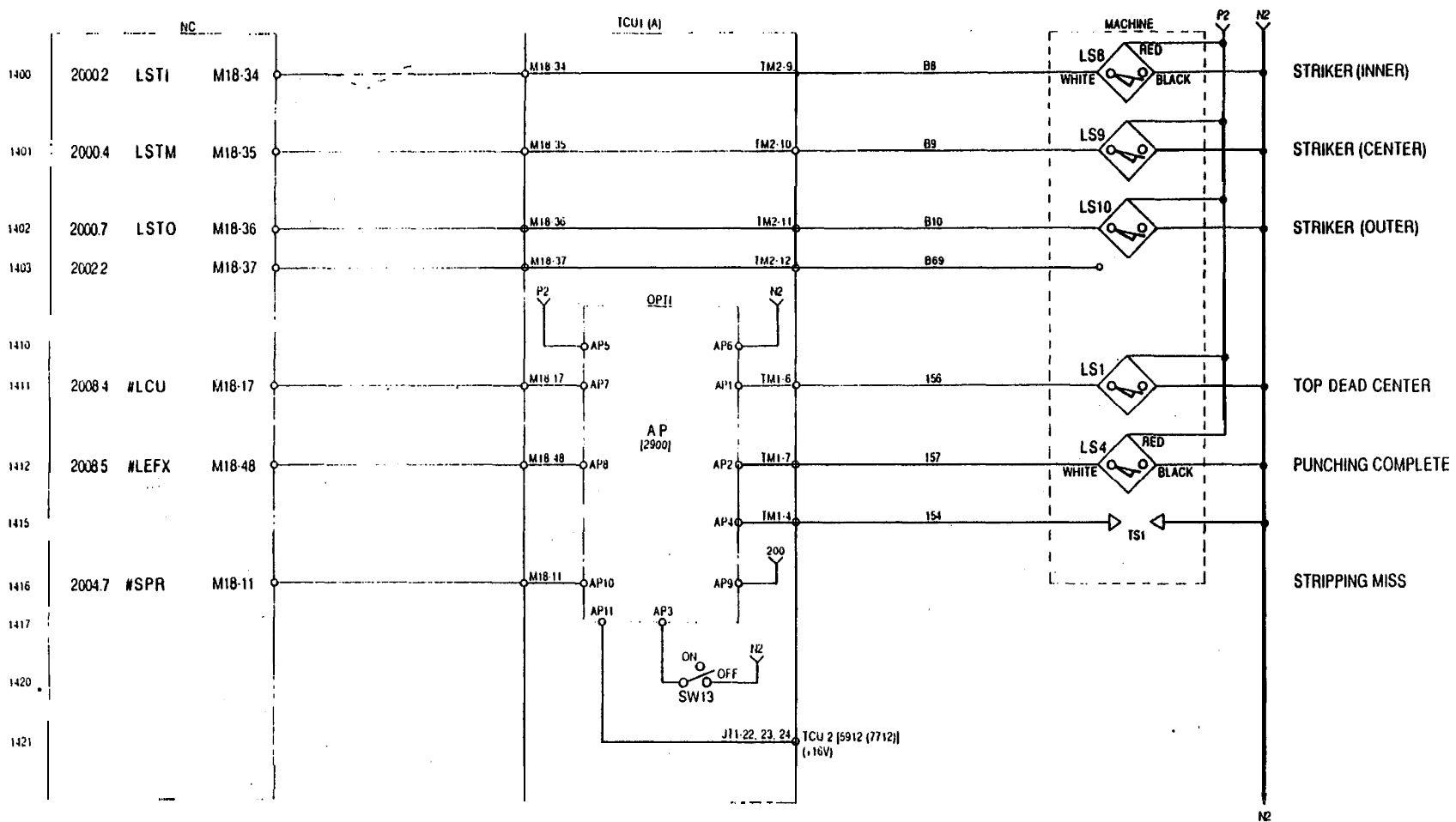


*1: OTHR relay is an additional one

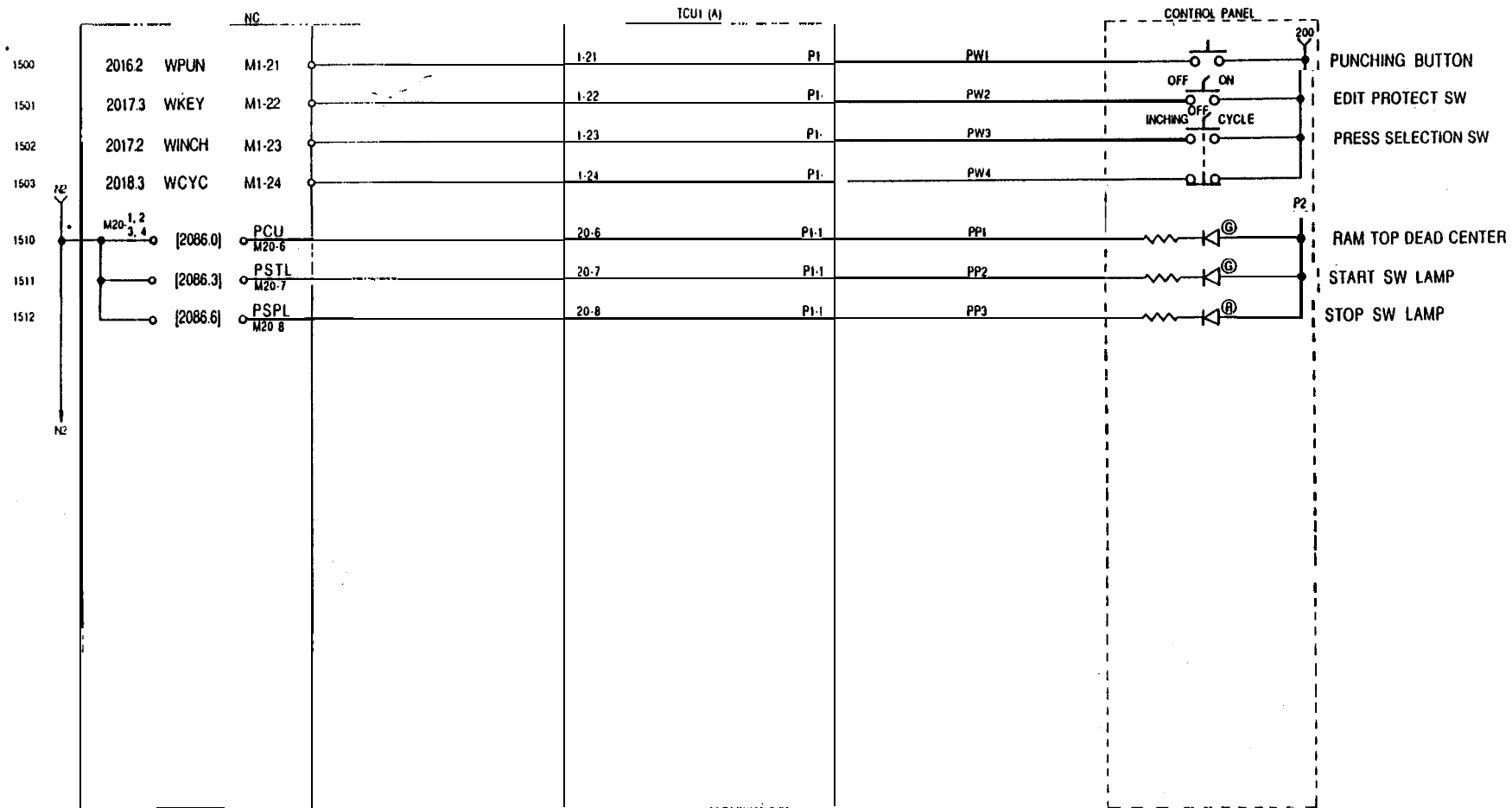
NC INPUT SIGNAL (PROXIMITY SWITCHES) 1



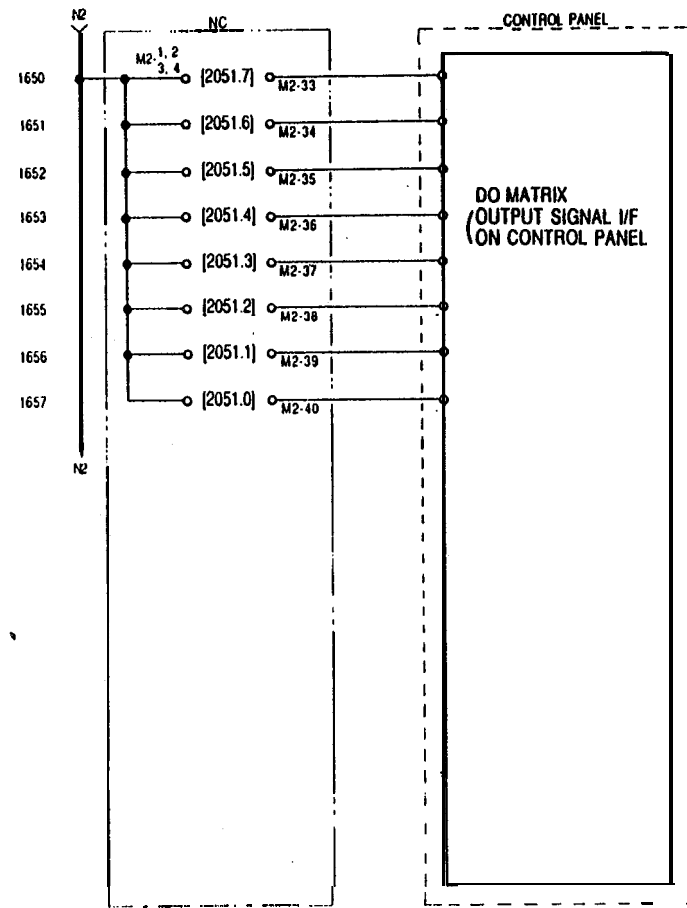
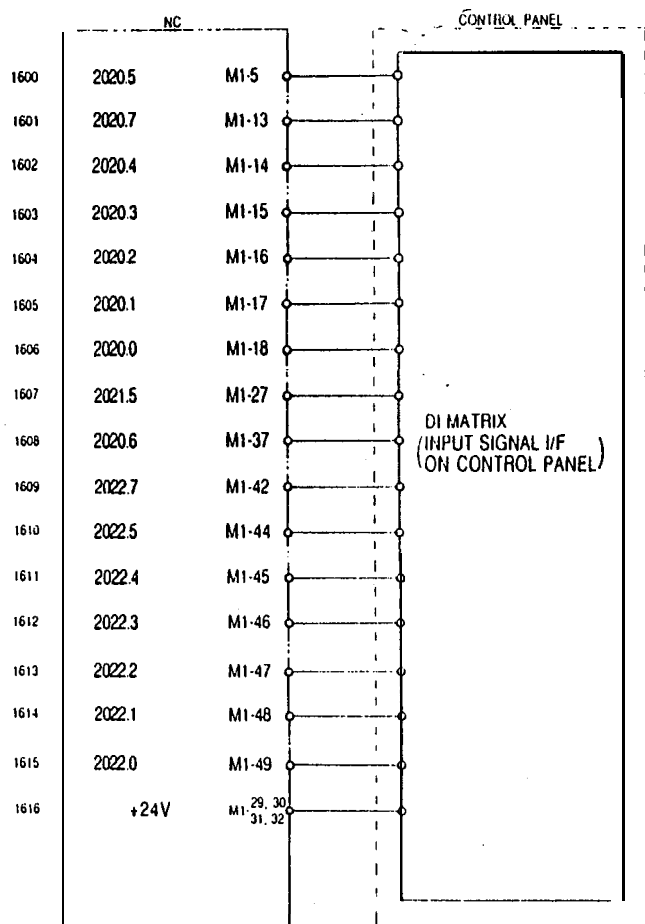
NC INPUT SIGNAL (PROXIMITY SWITCHES) 2



NC CONTROL PANEL 1



NC CONTROL PANEL 2



NC CONTROL PANEL 3

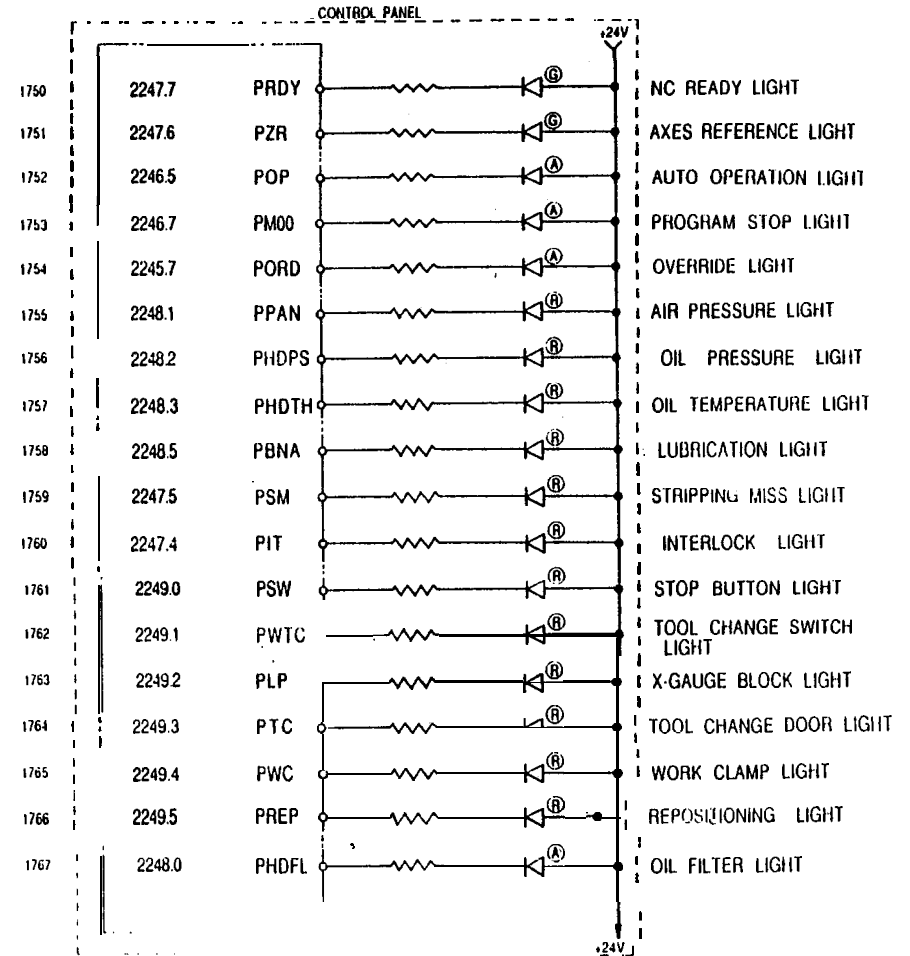
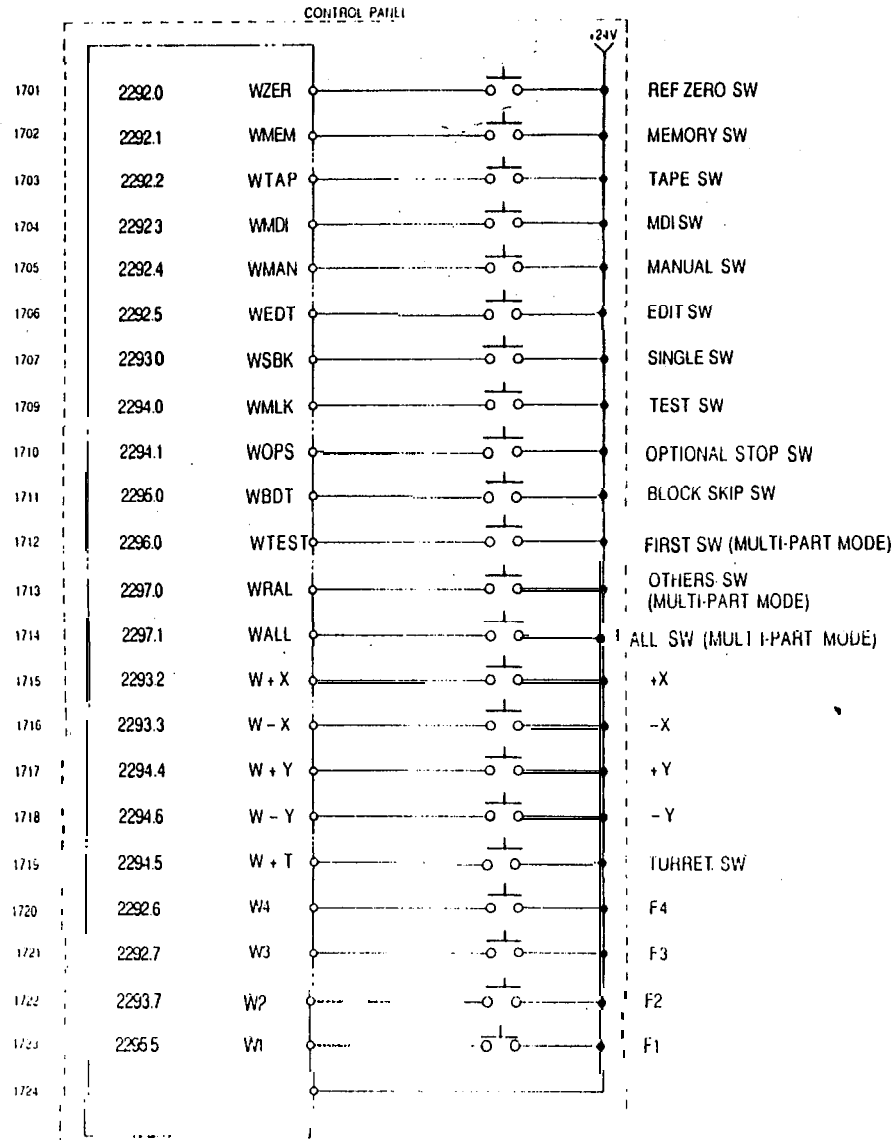
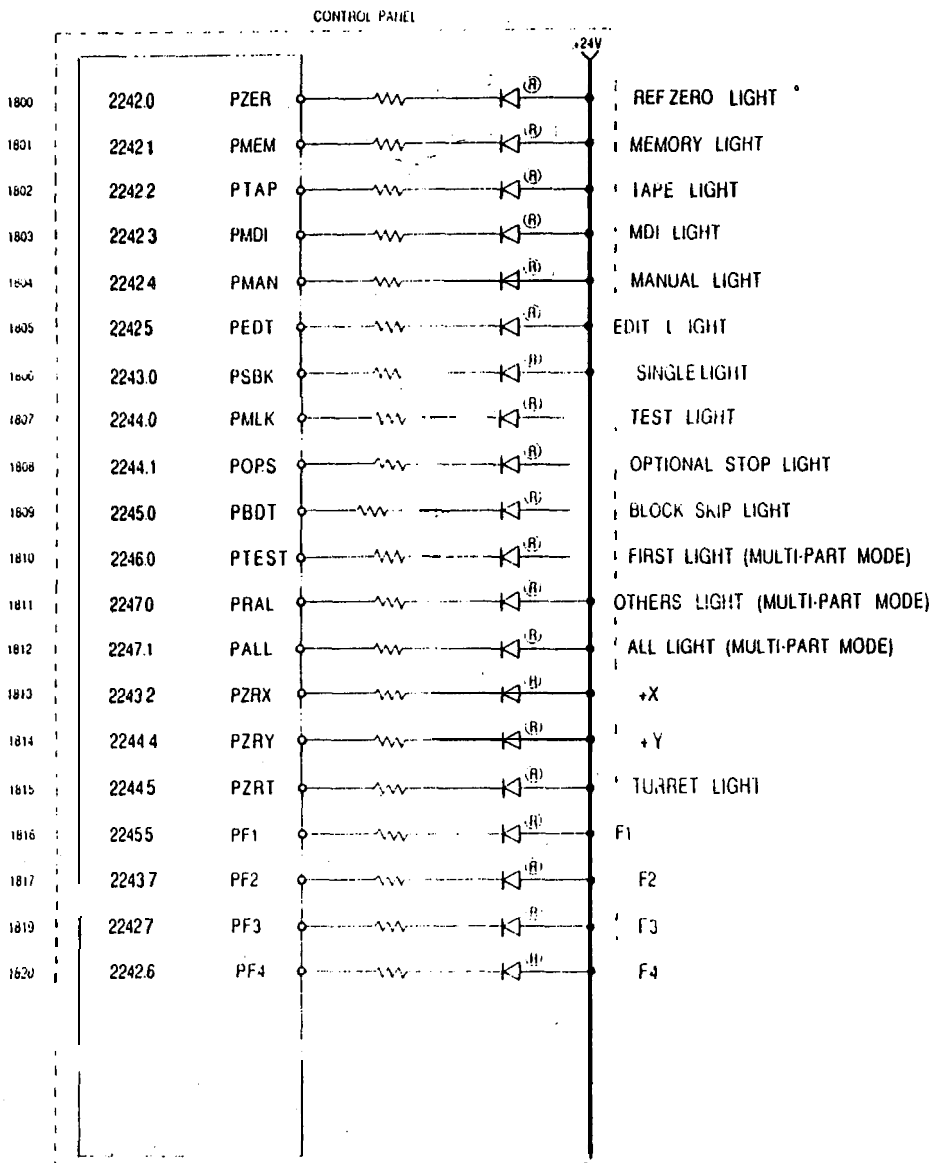


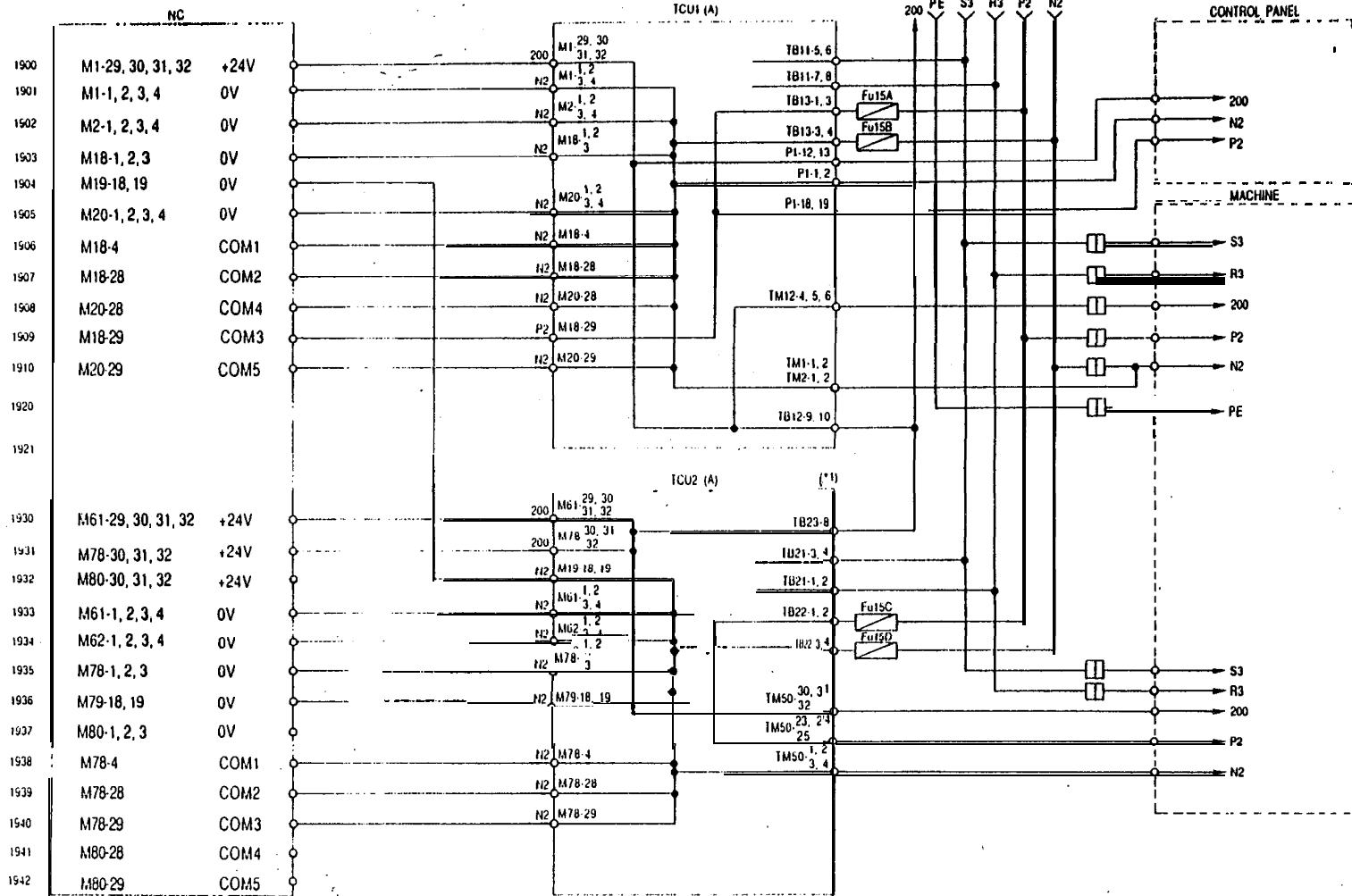
Figure 1: Corresponding image bits table (different from actual wiring)

NC CONTROL PANEL 4



Caution 1: Corresponding image bits table (different from actual wiring)

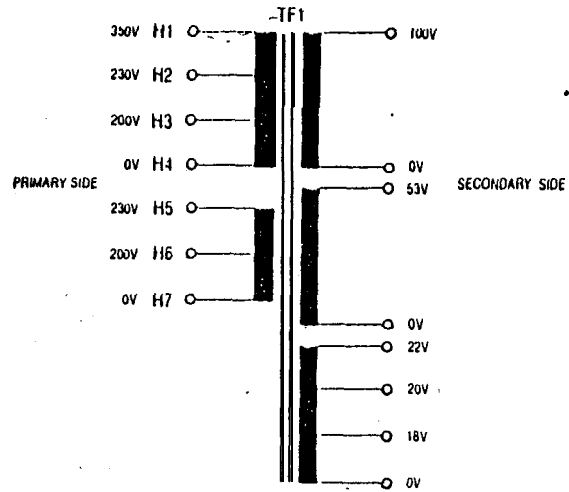
NC POWER SUPPLY CIRCUIT



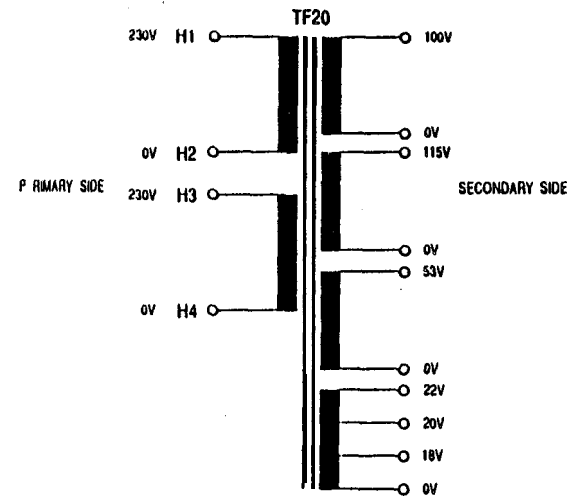
*1: TCU2 is an optional PCB.

TRANSFORMER CONNECTION DIAGRAM

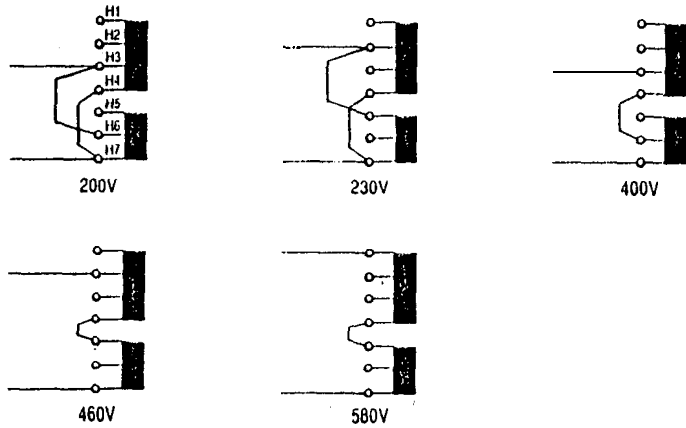
TF 1 CONNECTION DIAGRAM



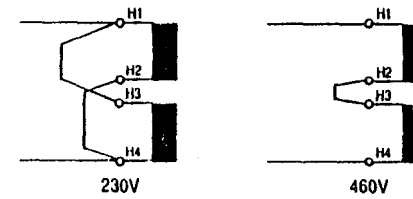
TF20 CONNECTION DIAGRAM



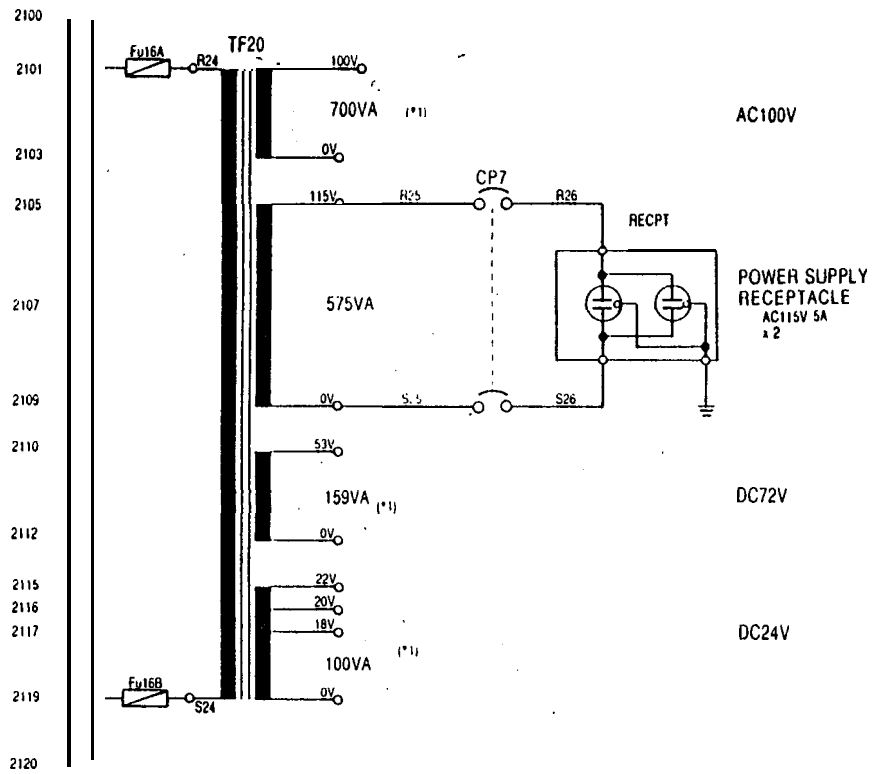
PRIMARY SIDE CONNECTION



PRIMARY SIDE CONNECTION

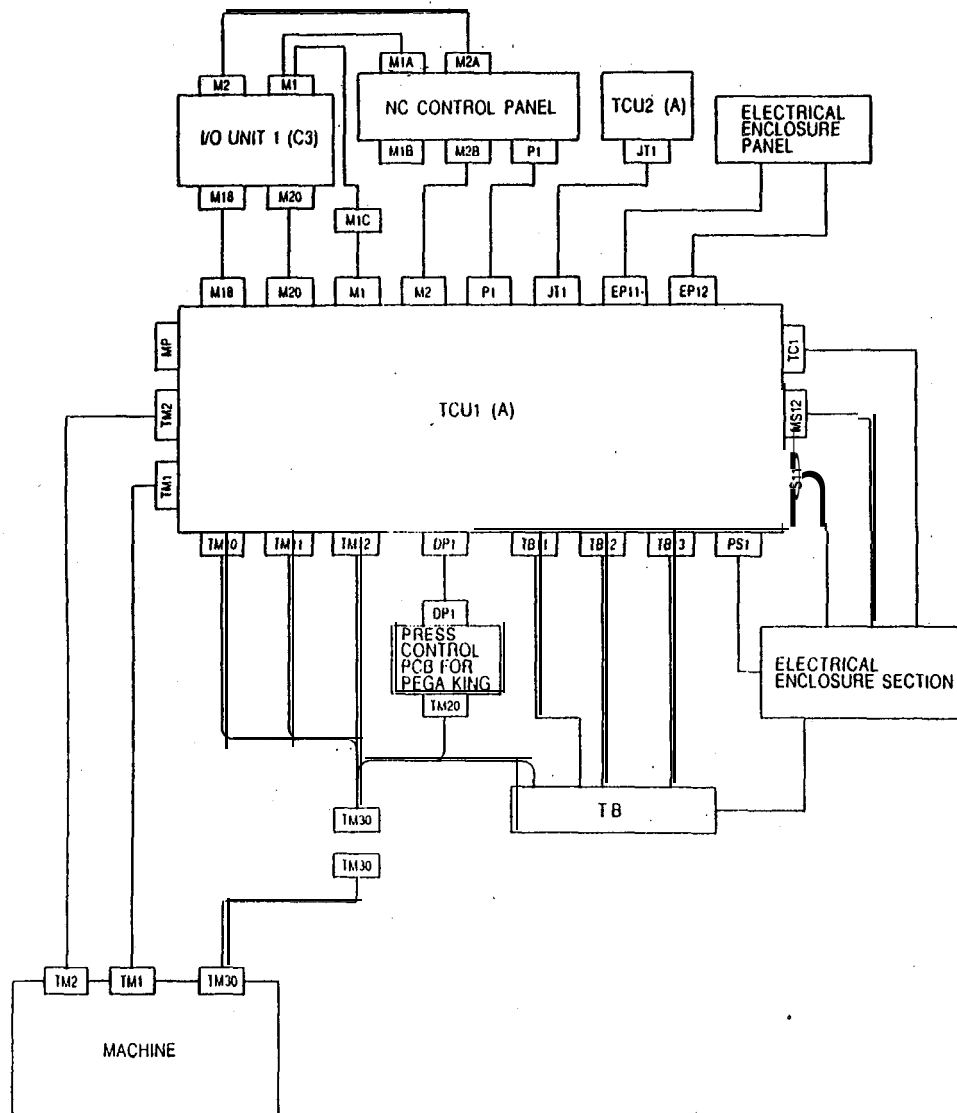


POWER SUPPLY RECEPTACLE [Option limited to use in U.S.]



*1: Connect the 100V AC and 24V DC power supplies as shown for the standard transformer TF1

TCU1 CONNECTION DIAGRAM



TCU1 CONNECTOR PIN ARRANGEMENT

M1

1	2	3	4	5	6	7	8	9	10
0V	0V	0V	0V		LBKUA	LBKUB	APLU	#LES-Y	#LES-X
N2	N2	N2	N2						
11	12	13	14	15	16	17	18	19	20
#LES+Y	#LES+X							WCSTI	WPSW
21	22	23	24	25	26	27	28	29	30
WPUN	WKEY	WINCH	WCYC	#ORDX	LIPC		+24V	+24V	
							200	200	
31	32	33	34	35	36	37	38	39	40
+24V	+24V	LCPUA	LCPUB	LCPDA	LCPDB		LBKDA	LBKDB	LWSN
200	200								
41	42	43	44	45	46	47	48	49	50
LWSD		PSPAN							

MODEL MR-50RMA (HONDA)

M2

1	2	3	4	5	6	7	8	9	10
0V	0V	0V	0V	LLPX	AOP	HHN	PWTOM	MSPI	MSPO
N2	N2	N2	N2						
11	12	13	14	15	16	17	18	19	20
MSTI	MSTM	MSTO	STI	STO	SHP	IBK	ICLP	SWS	SWSE
21	22	23	24	25	26	27	28	29	30
SWC	BSTL	ARON	SDTB	ASPL	ALM	OIHR			
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
AWMF	AWMB	SAFV	SWH	EMX	APFB	AIF	ANBL	ALPY	

MODEL MR-50RM/ (HONDA)

TM30 PIN ARRANGEMENT

1	2	3	4	5	6	7	8	9	10
78	77	80	75	977	76	100	102	430	430B
11	12	13	14	15	16	17	18	19	20
405	200	200	200	82	89	104	106	105	83
21	22	23	24	25	26	27	28	29	30
						0			
84	R3	R3	R3	S3	15		P2	P2	N2
31	32	33	34	35	36	37			
	0								
N2		PE	PE	PE	430C	430D			

MODEL: 206306-1 (AMP)

M18

1	2	3	4	5	6	7	8	9	10		
0V	0V	0V	COM1	#LHSX	#LOT+Y	HDPS	HDFL	PECM	WFWC		
N2	N2	N2	N2								
11	12	13	14	15	16	17	18	19	20		
#SPR	P/S	WIT	P/S	WC	ITBL	#LSPIA	#LSPIB	#LCU	#LNBS	#LOT-X	HDTH
21	22	23	24	25	26	27	28	29	30		
LLP	#LOT-Y	LWHF	LWHR	LREP	#LHST	WLST	COM2	COM3			
							N2	P2			
31	32	33	34	35	36	37	38	39	40		
		#LOT+X	LSTI	LSTM	LSTO	0	#LHSY	WITT	WWPB		
41	42	43	44	45	46	47	48	49	50		
WWPF	0	LWSL	#LHSC	LWSR	#LSPOA	#LSPOB	#LEFX	#LCOF			

MODEL: IR-50RMA (HONDA)

M19 (CONNECT TO TCU2)

1	2	3	4	5	6	7	8	9	10
ATR	ATL	TCM	ATH	SMOP	WHR	STB	TA	TB	TC
11	12	13	14	15	16	17	18	19	20
TSOL	STOA	STOB	STOC	ABL	TAPN		0V	0V	
							N2	N2	

MODEL: MR-20RMD2 (HONDA)

M20

	2	3	4	5	6	7	8	9	10
0V	0V	0V	0V	PENB	PCU	PSTL	PSPL	WTS	WSTI
N2	N2	N2	N2				---		
11	12	13	14	15	16	17	18	19	20
WSTO	WTPR	WTRL	SFEM	WSP0	WSPI	WEM	MPON	APM	HPM
21	22	23	24	25	26	27	28	29	30
PCZER	PNSP	MCEFF	PCBL1	WOR	WORC	SHD	COM4	COM5	
31	32	33	34	35	36	37	38	39	40
		PCBL2	PCRSA	MP33	PCROT	0	CSOH	LWTC	LTC
41	42	43	44	45	46	47	48	49	50
MDFX	MHDX	LLBNA	KYON	WSTPI	SFMT	LWPH	LIDX	LOD	

MODEL: MR-50RMA (HONDA)

TM1

1	2	3	4	5	6	7	8	9	10
N2	N2	153	154	423	156	157	B20X	B21X	B24X
11	12	13	14	15	16	17	18	19	20
B25X	B26X	B27X	B28X	B22X	B23X	234	235	440	441
21	22	23	24	25	26	27	28	29	30
								0	0
442	220	224	953	954	214	316A	315		
31	32	33	34	35	36	37	38	39	40
0	0								
317	318	417	215	216	217	B11	B12	B3	223
41	42	43	44	45	46	47	48	49	50
955	227	B35	B36	B6	201	222	319	206	205

MODEL: MR-50RMD2 (HONDA)

JT1 (CONNECTED TO TCU2)

1	2	3	4	5	6	7	8	9	10
150A	150B	319A	319C	316A	316A	440	441	442	117S
11	12	13	14	15	16	17	18	19	20
							0	0	0
119S	920	923	924	925	941	927			
21	22	23	24	25	26				
0				0	0				
	+16V	+16V	+16V						

OPTION

MODEL: FAP-2601-1204-0BS (YAMAICHI)

P1

1	2	3	4	5	6	7	8	9	10
N2	N2	205	PW1	PW2	PW3	PW4	206A	206B	315
11	12	13	14	15	16	17	18	19	20
						0			0
316	200	200	PP1	PP2	PP3		P2	P2	

MODEL: MR-20RMD2 (HONDA)

TM2

1	2	3	4	5	6	7	8	9	10
N2	N2	150B	150	150A	990	991	992	B8	B9
11	12	13	14	15	16	17	18	19	20
	0								
B10	B69	221	254	255	236	258	237	492	494
21	22	23	24	25	26	27	28	29	30
497	499	406	308	309	310	313	314	B15	B13
31	32	33	34	35	36	37	38	39	40
B14	B2	490	495	247	416	202	203	204	211
41	42	43	44	45	46	47	48	49	50
				0					
212	213	422	426	262	208	210	404	218	228

MODEL: MR-50RMD2 (HONDA)

EPI1

1	2	3	4	5	6	7	8	9	10
200	150	150C	417	418	428	42	419	200	419A
11	12								
262	318								

MODEL: 350213-1 (AMP)

AUTO POWER SHUTOFF AND MP

EPI2

1	2	3	4
S3	37	38	O

SCRAP CONVEYOR

MODEL: 350543-1 (AMP)

TM10

1	2	3	4	5	6	7	8
78	77	80	75	977	76	100	102

MODEL: 350212-1 (AMP)

TM11

1	2	3	4	5	6	7	8
82	89	104	106	105	83	84	O

WORK CHUTE, WORK SELECTOR,
X-GAUGE BLOCK AND Y-AXIS PIN

MODEL: 350212-1 (AMP)

TM12

1	2	3	4	5	6	7	8
430	430B	405	200	200	200	213	317

MODEL: 350212-1 (AMP)

DPI

1	2	3	4
P2	12	+16V	PF

MODEL: 350543-1 (AMP)

TB11

1	2	3	4	5	6	7	8	9	10
74	108	COFB	O	S3	S3	R3	R3	434M	434P
11	12								
COFA	COF1								

MODEL: 350213-1 (AMP)

TB12

1	2	3	4	5	6	7	8	9	10
206B	206G	319	319A	319C	319D	301	302	200	200
11	12								
EOF	COM								

MODEL: 350213-1 (AMP)

TB13

1	2	3	4
P2	P2	12	12

MODEL: 350543-1 (AMP)

PS1

1	2
P7	P7

MODEL: 350539-1 (AMP)

MS11

1	2	3	4	5	6	7	8
							O
72	975	33	34A	35A	505	42	

MODEL: 350212-1 (AMP)

MS12

1	2	3	4	5	6	7	8	9	10
400	401	950	951	315	324	P2	490	495	R2
11	12								
	O								
504									

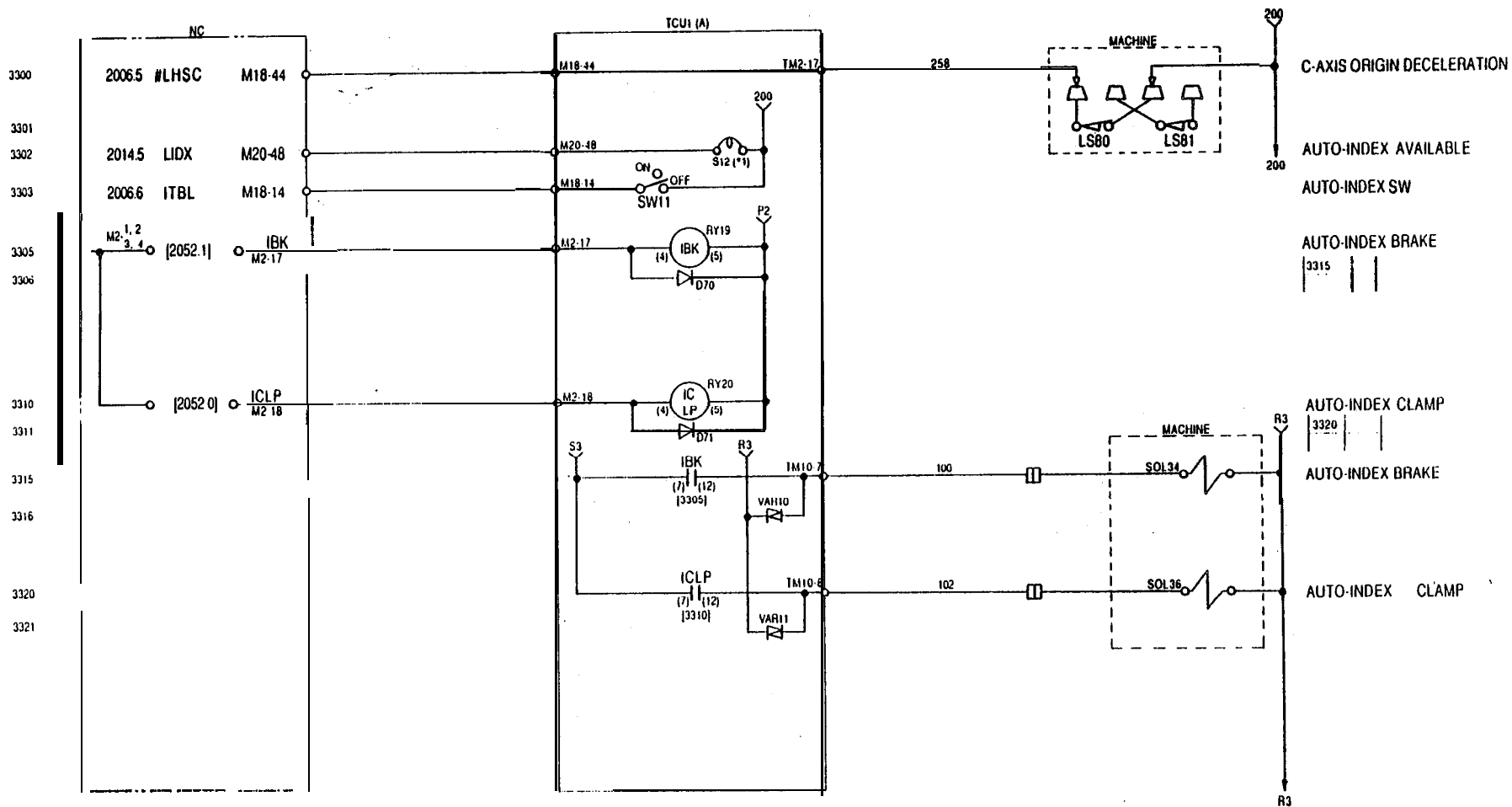
MODEL: 350213-1 (AMP)

TC1

1	2	3	4	5	6	7	8
991	990	992	917	200	404	S3	R3

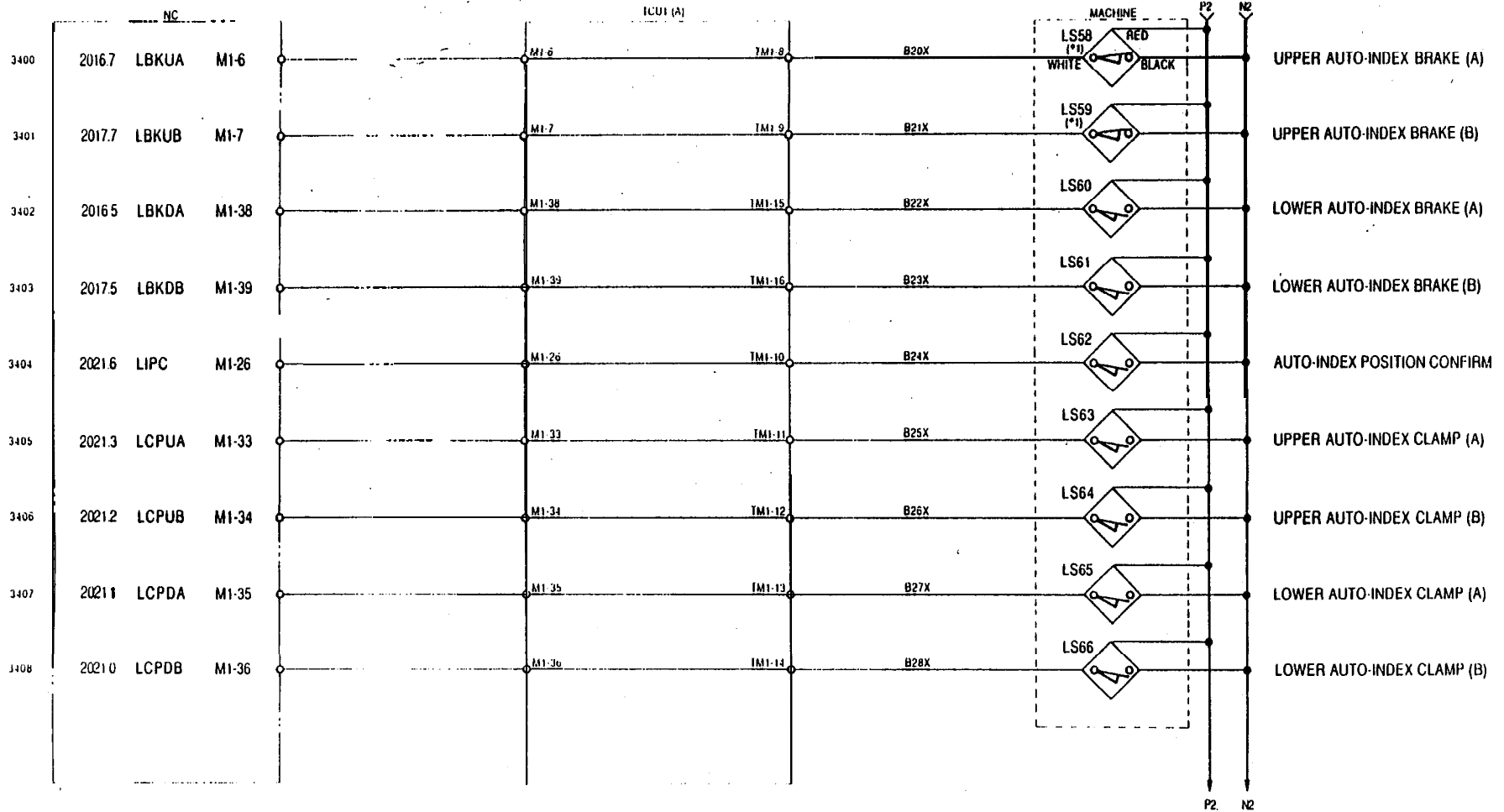
MODEL: 350212-1 (AMP)

AUTO-INDEX 1 [Option (TCU1)]



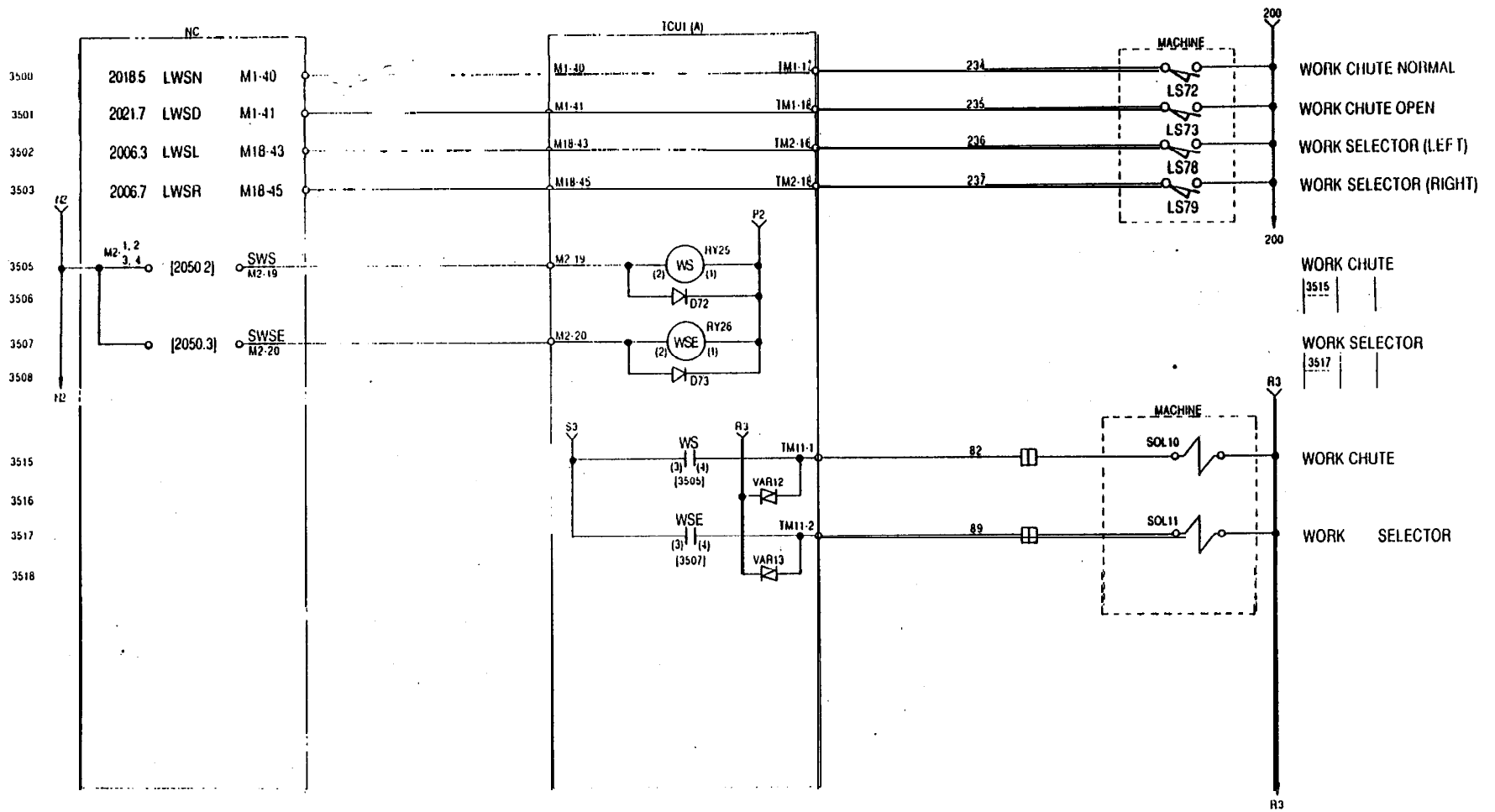
*1 Have S12 short-circuited when AUTO-INDEX is equipped.

AUTO-INDEX 2 [Option (TCU1)]

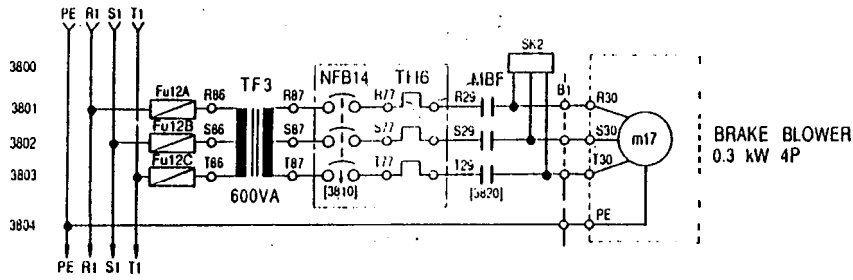


*1: LS58 and LS59 are of the normally closed type for PEGA and are of the normally open type for COMA

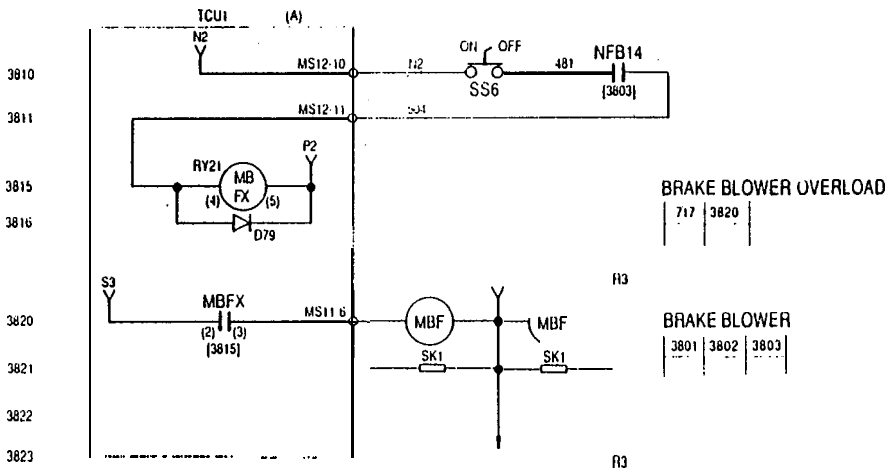
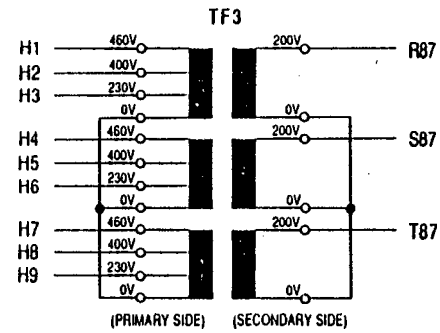
WORK CHUTE, WORK SELECTOR [Option (TCU1)]



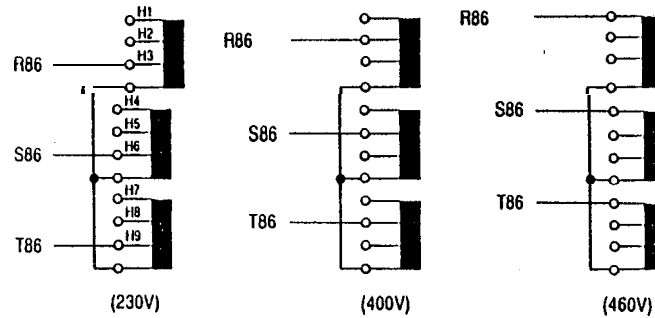
HEAT-PROOF CIRCUIT



TF3 CONNECTION DIAGRAM

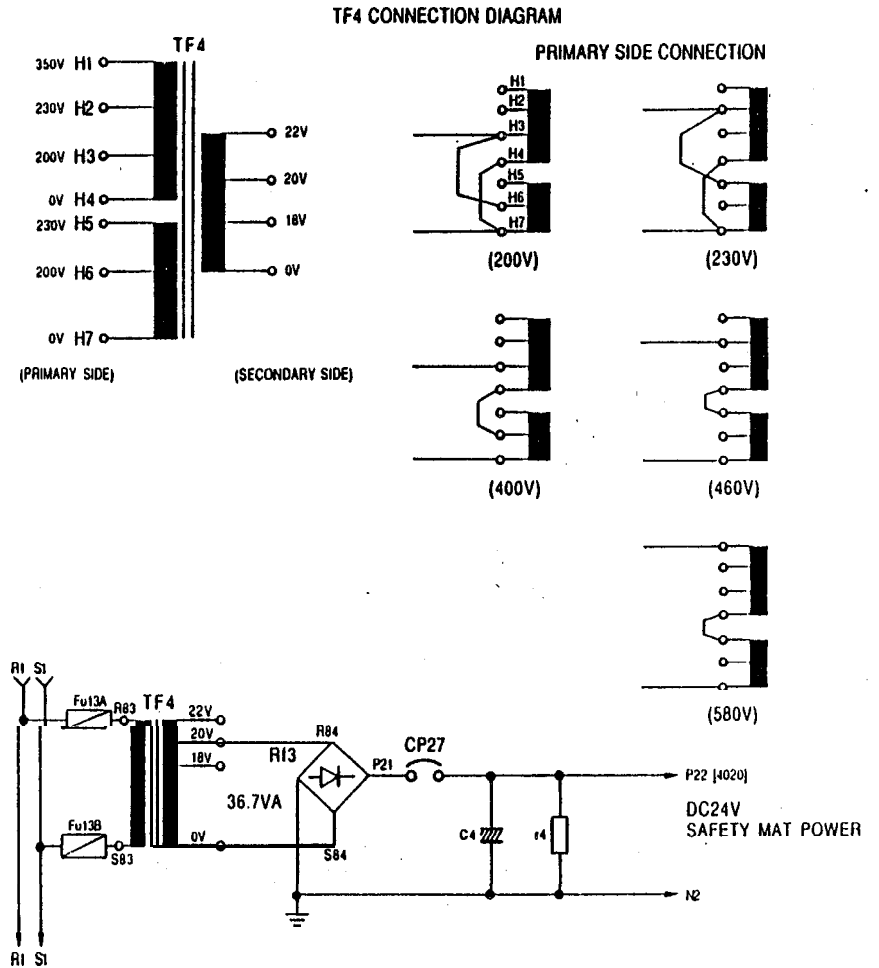
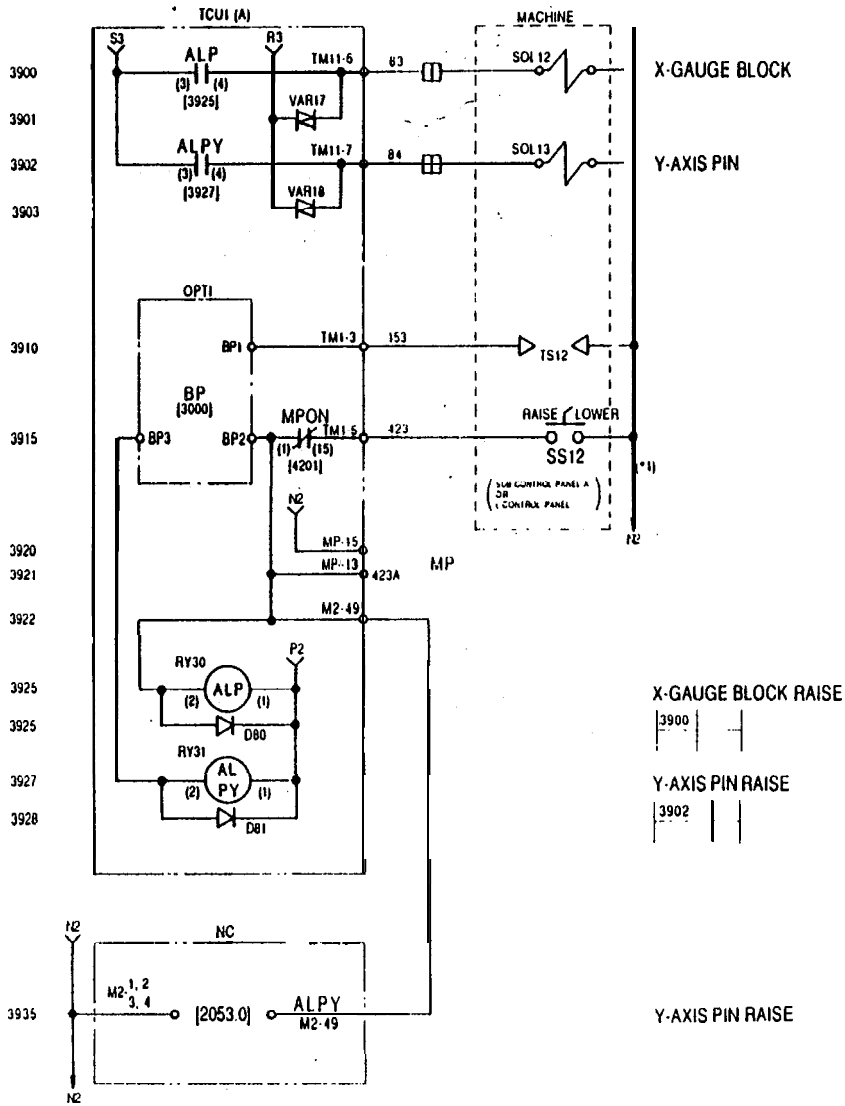


PRIMARY SIDE CONNECTION



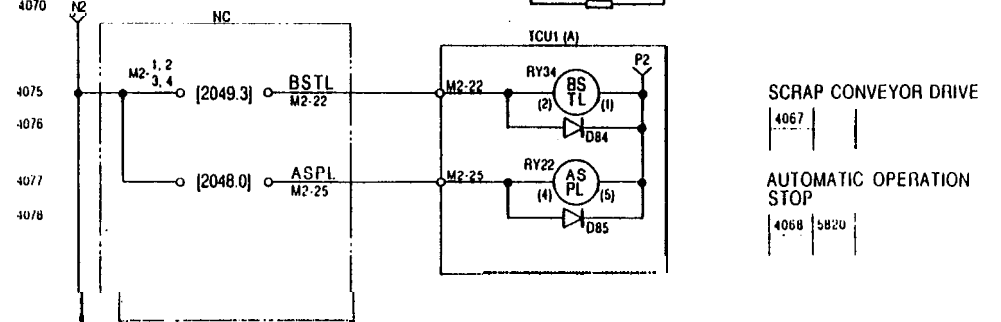
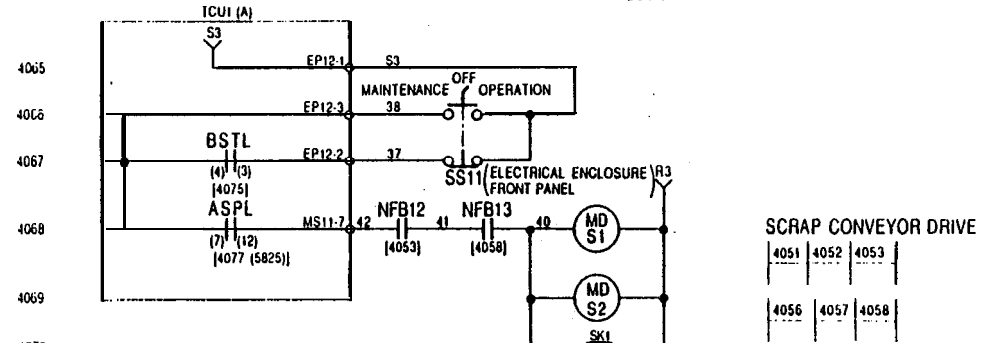
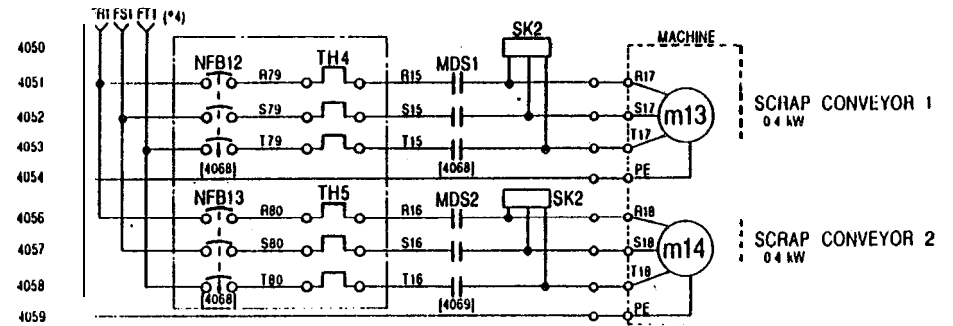
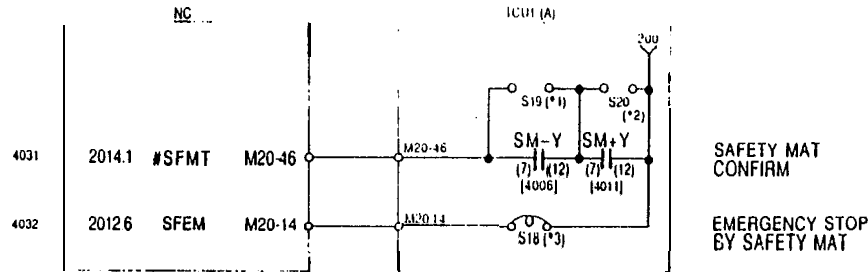
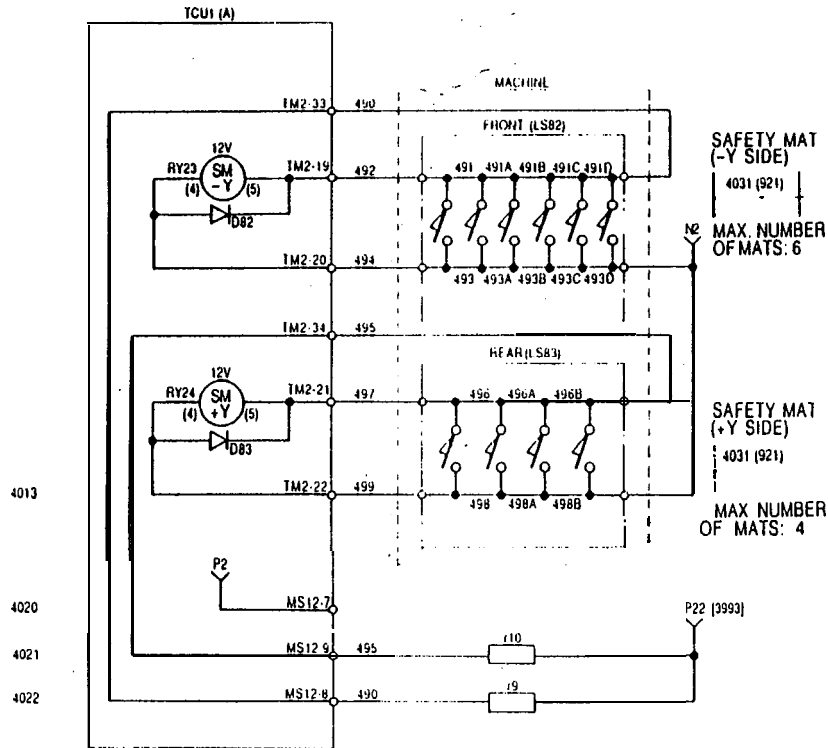
*1: Install brake blower M17 in place of standard fan Fm17 (page 3) on brake side

PNEUMATIC X-GAUGE BLOCK, Y-AXIS PIN, SAFETY MAT [Option (TCU1)]



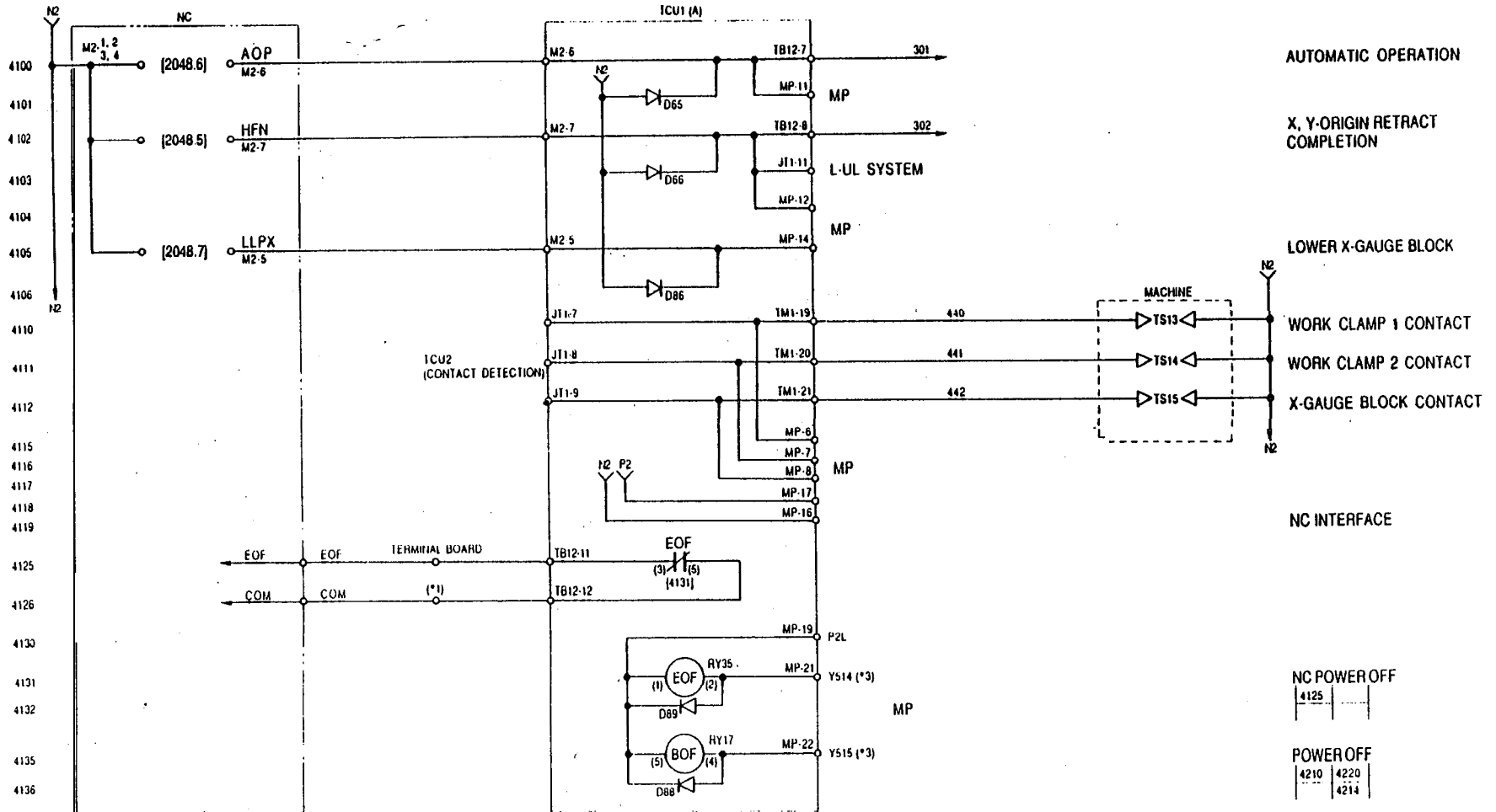
*1: When L-UL system is used, the switch must be on the L control panel

SCRAP CONVEYOR, SAFETY MAT [Option (TCU1)]



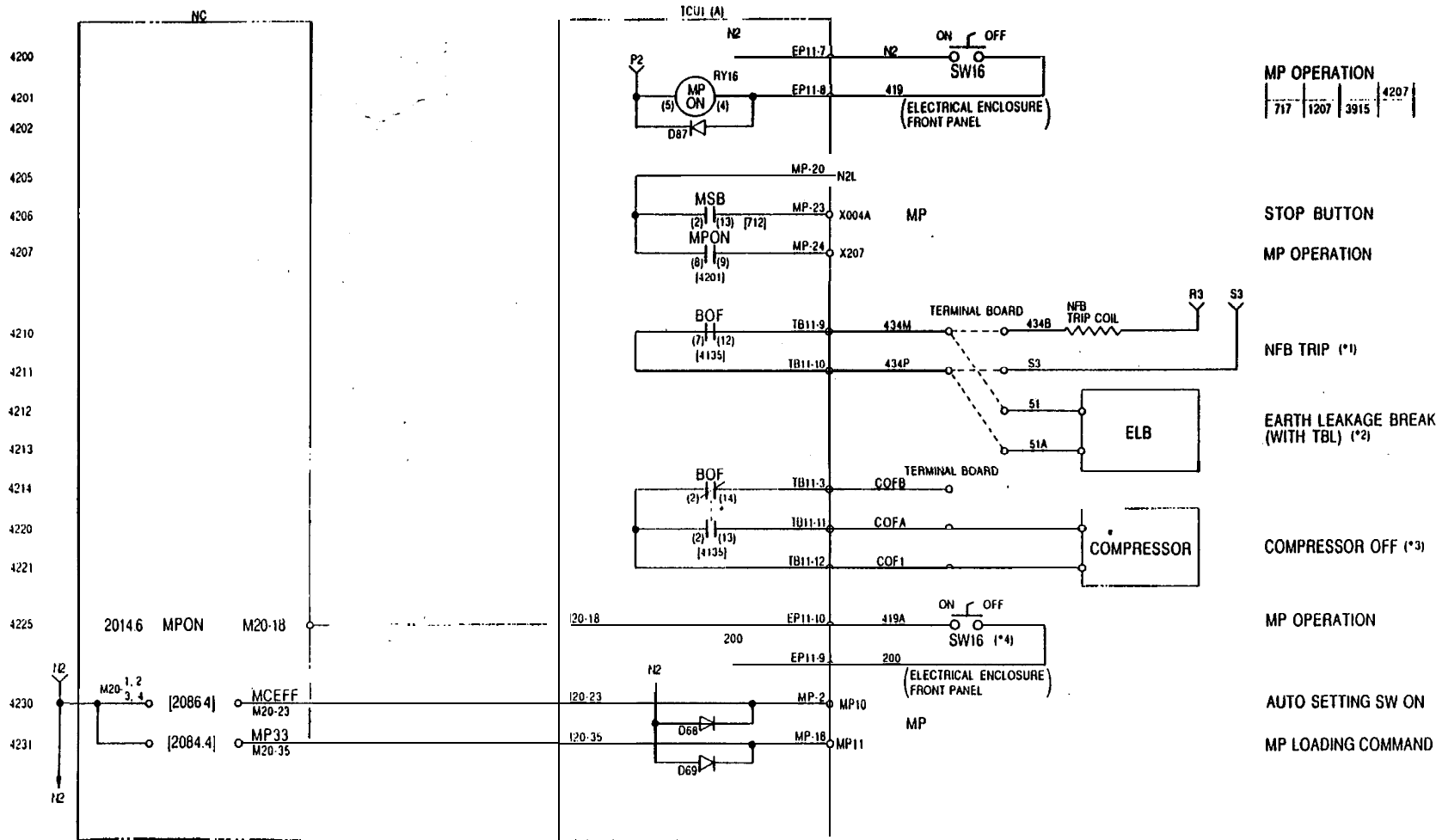
- *1: When safety mat (-Y side) is activated, have S19 opened.
- *2: When safety mat (+Y side) is activated, have S20 opened.
- *3: If safety mat takes part in emergency stop, have S18 opened. (European specification)
- 4: Powers supply by FR1, FS1 or FT1 is conducted from L-UL electric power. (Terminal size: M3)

MANIPULATOR RETROFITTING 1 [Option (TCU1)]



*1: Have this terminal board short-circuited if not in service
 *2: This shall not be coupled with Auto Power Shutoff
 *3: Line No. varies according to MP.

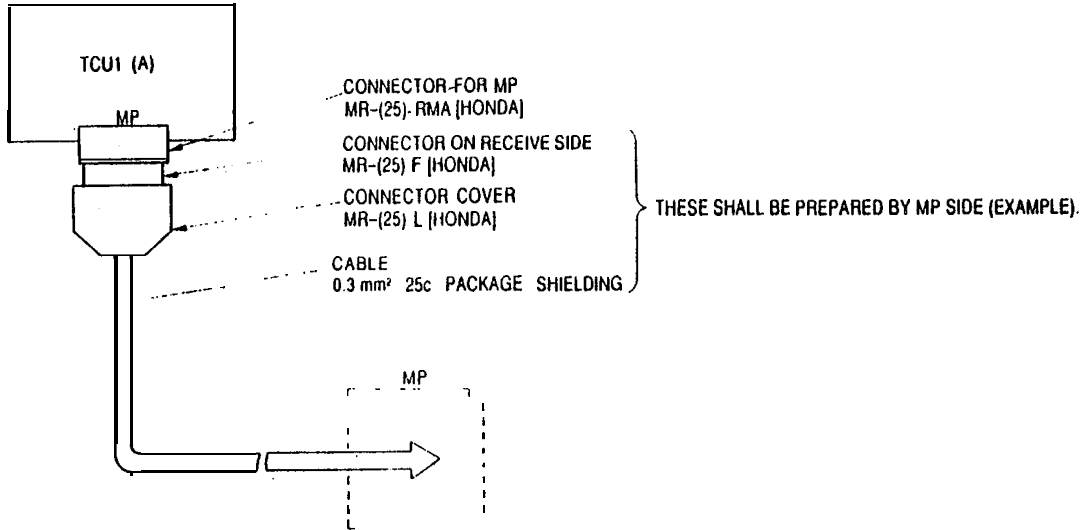
MANIPULATOR RETROFITTING 2 [Option (TCU1)]



*1: The NFB trip shall be used when its use is required (Connect line No. 434M with 434B and No. 434P with S3.)
 *2: The earth leakage breaker shall be used when its use is required (Connect line No. 434M with 51 and No. 434P with 51A.)
 *3: This shall be added when it is needed
 *4: This shall be added only when clamp positioner is in service

MANIPULATOR RETROFITTING 3 [Option (TCU1)]

CONNECTION OF THE CONNECTORS FOR MP



ARRANGEMENT OF THE CONNECTOR PINS FOR MP

1	2	3	4	5	6	7	8	9	10
	MCEFF	WCST1	WwSTP1						
200	MP10	205	206E	206K	440	441	442	303	303A
11	12	13	14	15	16	17	18	19	20
OP	HFN		LLPX				MP33		
301	302	423A		N2	N2	P2	MP11	P2L	N2L
21	22	23	24	25					
(Y514)	(Y515)	X004A	X207	X206H					

MODEL MR (25) RMA [HONDA]

TCU2 CONNECTOR PIN ARRANGEMENT [Option (TCU2)]

M61

1	2	3	4	5	6	7	8	9	10
0V	0V	0V	0V	WCZR	ORDR2	CL1	CC2	LP	PSWCA1
N2	N2	N2	N2						
11	12	13	14	15	16	17	18	19	20
PSWCA2	PSWCB1	PSWCB2	WCZR1	WCZR2	INOT	WC-OT	WC-OT	W#STP2	WCEFF
21	22	23	24	25	26	27	28	29	30
WM00	WCRS	CSLA	CSLB	NCKX	0	0		+24V	+24V
					137S			200	200
31	32	33	34	35	36	37	38	39	40
+24V	+24V	IFH	SCL	MFNX	LERS	AIR	SIR	SRU	PTOS
200	200								
41	42	43	44	45	46	47	48	49	50
WJST	USF	ULZ	OSU	ARU	SOFF	IM61	0	ACPR	
							149S		

L-UL

MODEL MR-50RMD2 (HONDA)

M62

1	2	3	4	5	6	7	8	9	10
0V	0V	0V	0V	13X	14X	WCB1	WCB2	MAC1	OIHS1
N2	N2	N2	N2						
11	12	13	14	15	16	17	18	19	20
CL1A	CL2A	LPA	RDY	WZ	0	UL20	OSU0	AARU	PSWC
					TM60-8				
21	22	23	24	25	26	27	28	29	30
PSWH	ASTL	AMA	CLR1	WHOF	CPSO	CL10			
31	32	33	34	35	36	37	38	39	40
		CL20	LPO	USF20	UL20	STB00	AMF	AM28	AM24
41	42	43	44	45	46	47	48	49	50
AM22	AM21	AM18	AM14	AM12	AM11	MA1	SOFF0	USFO	

L-UL

MODEL MR-50RMD2 (HONDA)

M78

1	2	3	4	5	6	7	8	9	10
0V	0V	0V	COM1	0	LRMT	0	0	0	0
N2	N2	N2	N2	TM51-14		130S	TM51-17	TM51-18	TM51-19
11	12	13	14	15	16	17	18	19	20
0	0	WMIL	LTUJ	LTUD	ORDR1	ORDL	IM78	WTOD	WTDN
TM51-20	TM51-5								
21	22	23	24	25	26	27	28	29	30
MAT0	0	0	0	0	0	0	COM2	COM3	+24V
	TM51-8	TM51-9	TM51-10	TM51-11	TM51-12	TM51-13	N2	N2	200
31	32	33	34	35	36	37	38	39	40
+24V	+24V	LMUT	TAPA	TAPB	TAPC	LTDA	LTDB	TDC	PTHU
200	200								
41	42	43	44	45	46	47	48	49	50
LTUA	PW1H	PCS	STBD	LMDN	USF2	UL22	LCP	LBK	

UNUSED

MODEL MR-50RMD2 (HONDA)

M79

1	2	3	4	5	6	7	8	9	10
NCAM	LLLP	TAT	M300	0	0	0	0	0	0
				144S	145S	146S	147S	TM61-10	TM51-21
11	12	13	14	15	16	17	18	19	20
0	0	0	0	0	0	0	0V	0V	
TM51-22	TM51-23	TM51-24	TM51-25	TM51-3	TM51-4				

L-UL

MODEL MR-20RMD (HONDA)

M80 (SPARE)

1	2	3	4	5	6	7	8	9	10
0V	0V	0V	0V						
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
							COM4	COM5	+24V
31	32	33	34	35	36	37	38	39	40
+24V	+24V								
41	42	43	44	45	46	47	48	49	50

MODEL MR-50RMD (HONDA)

TM50

1	2	3	4	5	6	7	8	9	10
N2	N2	N2	N2	240	240A	241	278	407	437
11	12	13	14	15	16	17	18	19	20
						0	0		
438	439	B16	136S	133S	134S			180	151
21	22	23	24	25	26	27	28	29	30
	0				0	0	0	0	
152		P2	P2	P2					200
31	32	33	34	35	36	37	38	39	40
						0		L-3-1	
200	200	465	410	411	412		132S		260
41	42	43	44	45	46	47	48	49	50
0									
	907	906	909	910	B70	B71	B72	944	945

MODEL MR-50RMD2 (HONDA)

TM70E

1	2	3	4	5	6	7	8	9	10
103	109	111	108	970	971	972	22	25	28
11	12	13	14	15	16	17	18	19	20
29	30	31	110	92	93	95	96	97	98
21	22	23	24	25	26	27	28	29	30
			0						
R3	R3	S3		R81	S81	R75	S75	R76	S76
31	32	33	34	35	36	37			
0	0	0	0	0	0	0			

MODEL: 206306-1 (AMP)

EP21

1	2	3	4	5	6	7	8	9	10
		0	0						
200	200			903	914	901	920	923	924
11	12	13	14	15	16	17	18	19	20
			0	0	0	0	0		
925	941	927						P2	P2

UNUSED

MODEL: MR-20RMD2 (HONDA)

EP22

1	2	3	4	5	6	7	8	9	10
									0
200	443	446	P2	445	447	448	449	459	135S

UNUSED

MODEL: 1-380991-0 (AMP)

EP23

1	2	3	4	5	6	7	8	9	10
						TM50-39			0
200	249	238A	290	408	263		P2	333	

L-UL

MODEL: 1-380991-0 (AMP)

TM60

1	2	3	4	5	6	7	8
103	109	111	108	970	971	972	M62-16

BEACON

MODEL: 350212-1 (AMP)

TM61

1	2	3	4	5	6	7	8	9	10
22	25	28	29	30	31	110	92	93	M79-9

UNUSED

MODEL: 1-380991-0 (AMP)

TB21

1	2	3	4	5	6	7	8
R3	R3	S3	S3	108	434	434A	148S

MODEL: 350212-1 (AMP)

TB22

1	2	3	4	5	6	7	8
P2	P2	N2	N2	285	435	EOF	COM

MODEL: 350212-1 (AMP)

TB23

1	2	3	4	5	6	7	8
370	373	371	372	465	342	256	200

UNUSED

MODEL: 350212-1 (AMP)

JT1 (CONNECTED TO TCU1)

1	2	3	4	5	6	7	8	9	10
150A	150B	319A	319C	316A	316A	440	441	442	117S
11	12	13	14	15	16	17	18	19	20
119S	920	923	924	925	941	927	O	O	O
21	22	23	24	25	26				
O				O	O				
	+16V	+16V	+16V						

MODEL: FAP-2601-1202-OBS (YAMAICHI)

TCU2 CHECK THROUGH HOLE [Option (TCU2)]

THROUGH HOLE FOR M19 CHECK

M19-	1	2	3	4	5	6	7	8	9	10
M19-	11	12	13	14	15	16	18			

THROUGH HOLE FOR M61 CHECK

M61-	N2									
M61-	1	5	6	7	8	9	20	21	22	23
			200							
M61-	24	25	29	46	47					

THROUGH HOLE FOR M62 CHECK

	N2								
M62-	1	5	6	7	8	9	10		

THROUGH HOLE FOR M78 CHECK

	N2									
M78-	1	4	13	14	15	16	17	18	19	20
				200						
M78-	21	28	29	30	33					

THROUGH HOLE FOR TM50 CHECK

	N2	N2								
TM50-	1	2	3	4	5	6	7	8	9	10
TM50-	11	12	13	14	15	16	17	18	19	20
			P2	P2						200
TM50-	21	22	23	24	25	26	27	28	29	30
	200									
TM50-	31	32	33	34	35	36	37	38	39	40
TM50-	41	42	43	44	45	46	47	48	49	50

THROUGH HOLE FOR L-UL2 CHECK

L-UL2	1	2	3	4	5	6	7	8	9	10
		200	200							
L-UL2	11	12	13	14	15	16	17	18	19	20

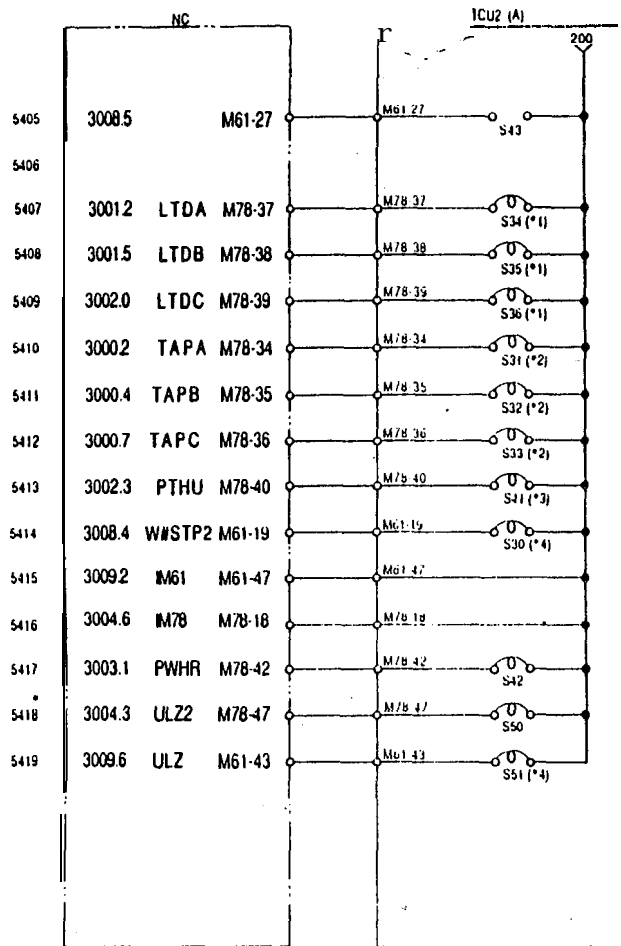
THROUGH HOLE FOR M79 CHECK

	N2								
M79-	18								

THROUGH HOLE FOR L-UL1 CHECK

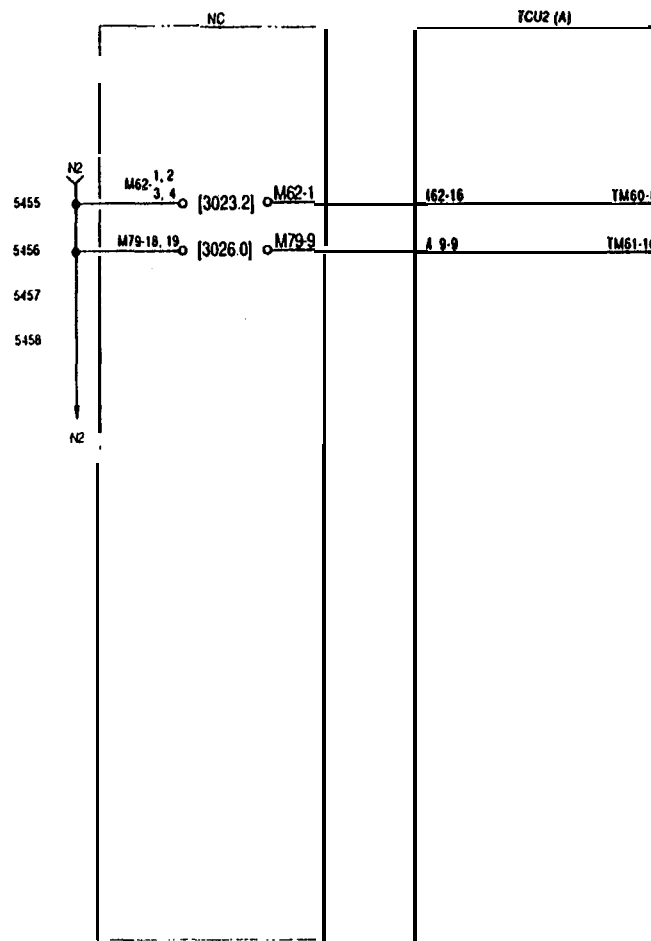
	N2								
L-UL1	1	38	39	50					

NC INPUT SIGNAL [Option (TCU2)]



LINE STOP
M61 CONNECTOR EMPLOY
M78 CONNECTOR EMPLOY

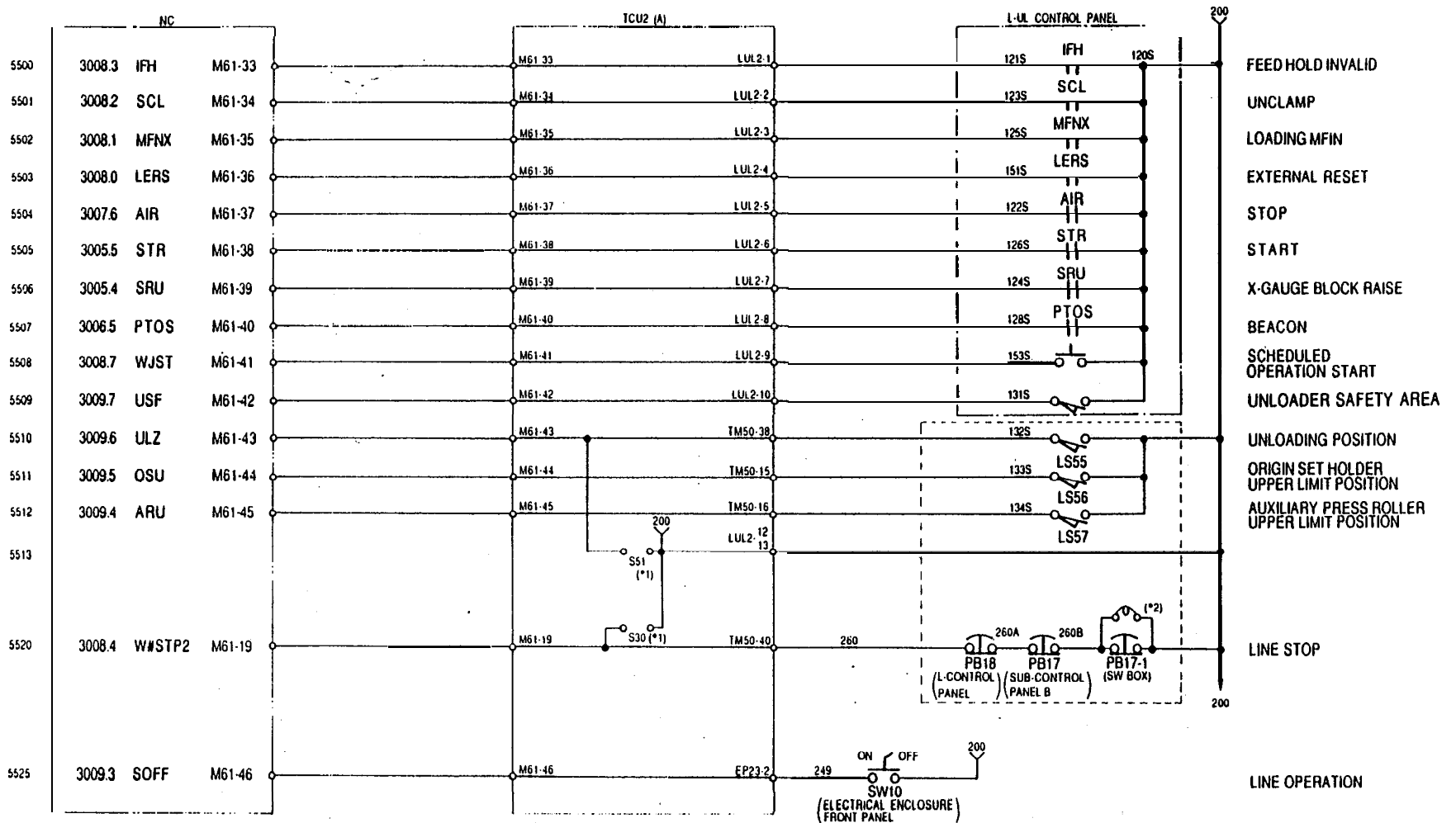
UNLOADING POSITION



- *1: Have S24, 35 and 36 short-circuited.
- *2: Have S31, 32 and 33 short-circuited
- *3: Have S41 short-circuited.
- *4: Have S30 and S51 short-circuited except when L-UL is in service

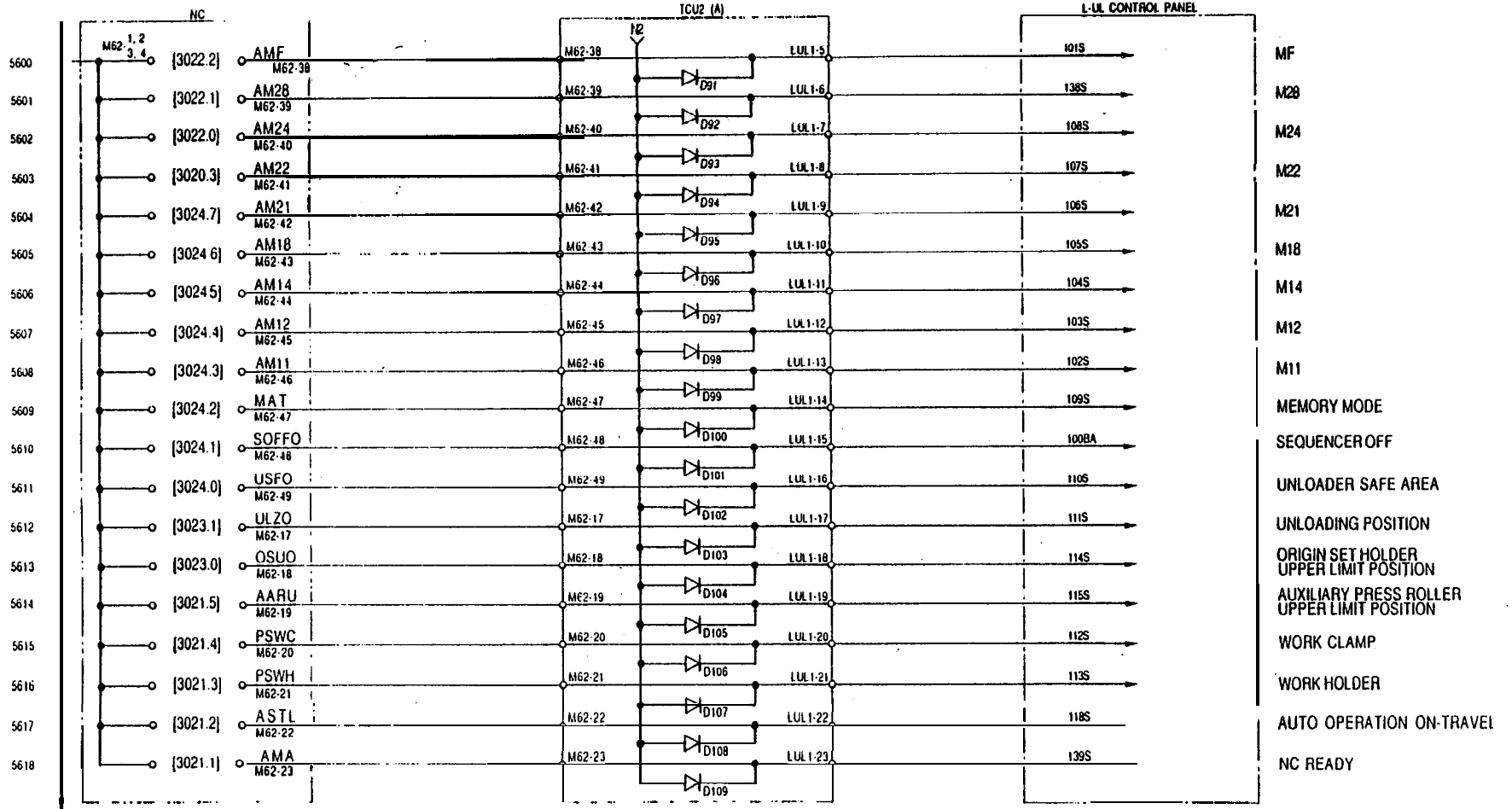
LOADING/UNLOADING 1 [Option (TCU2)]

- 42 -

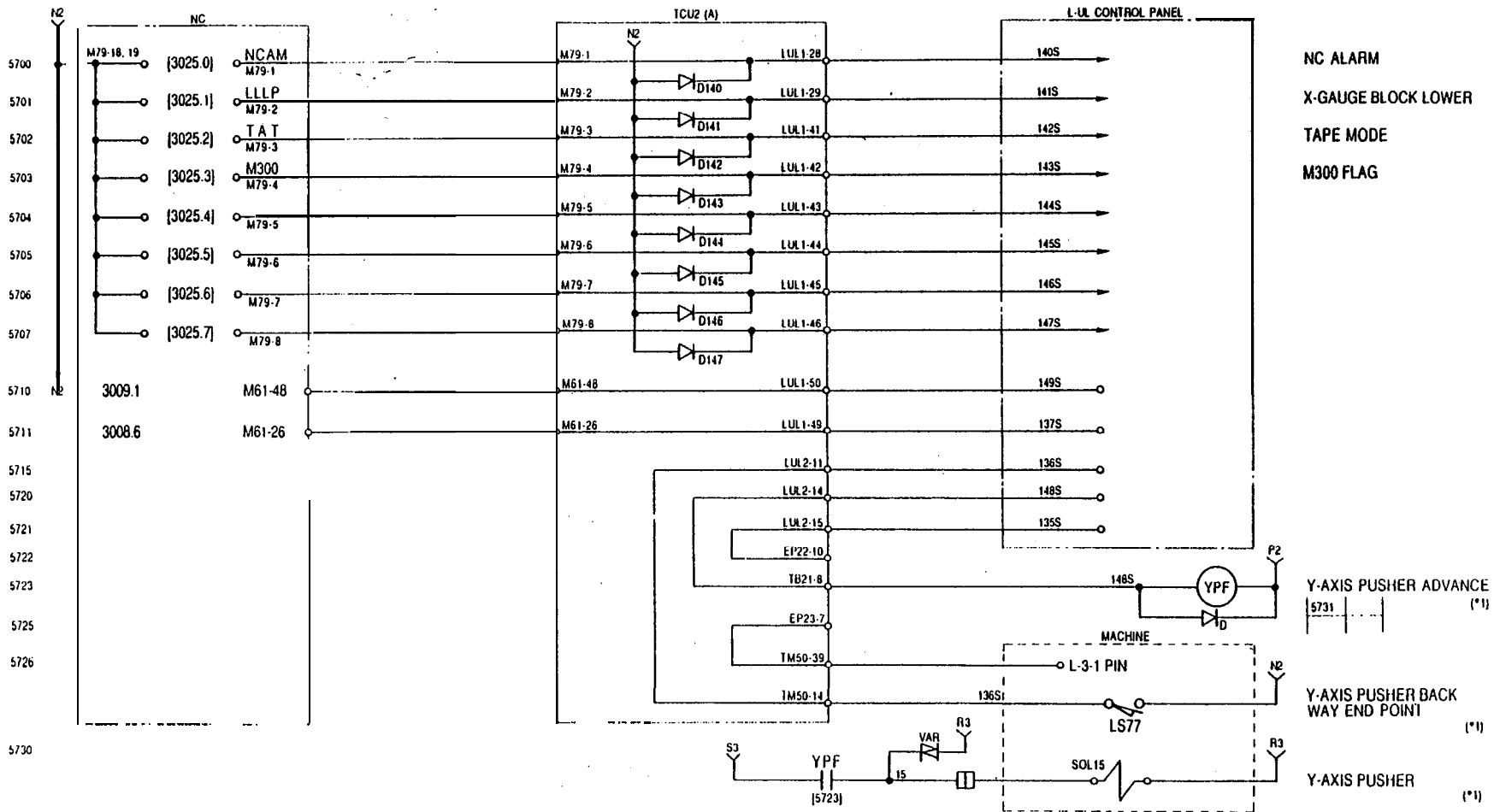


*1: Have S30 and S51 opened when L-UL is in service
 *2: This shall be short-circuited when SW box is not used

LOADING/UNLOADING 2 [Option (TCU2)]

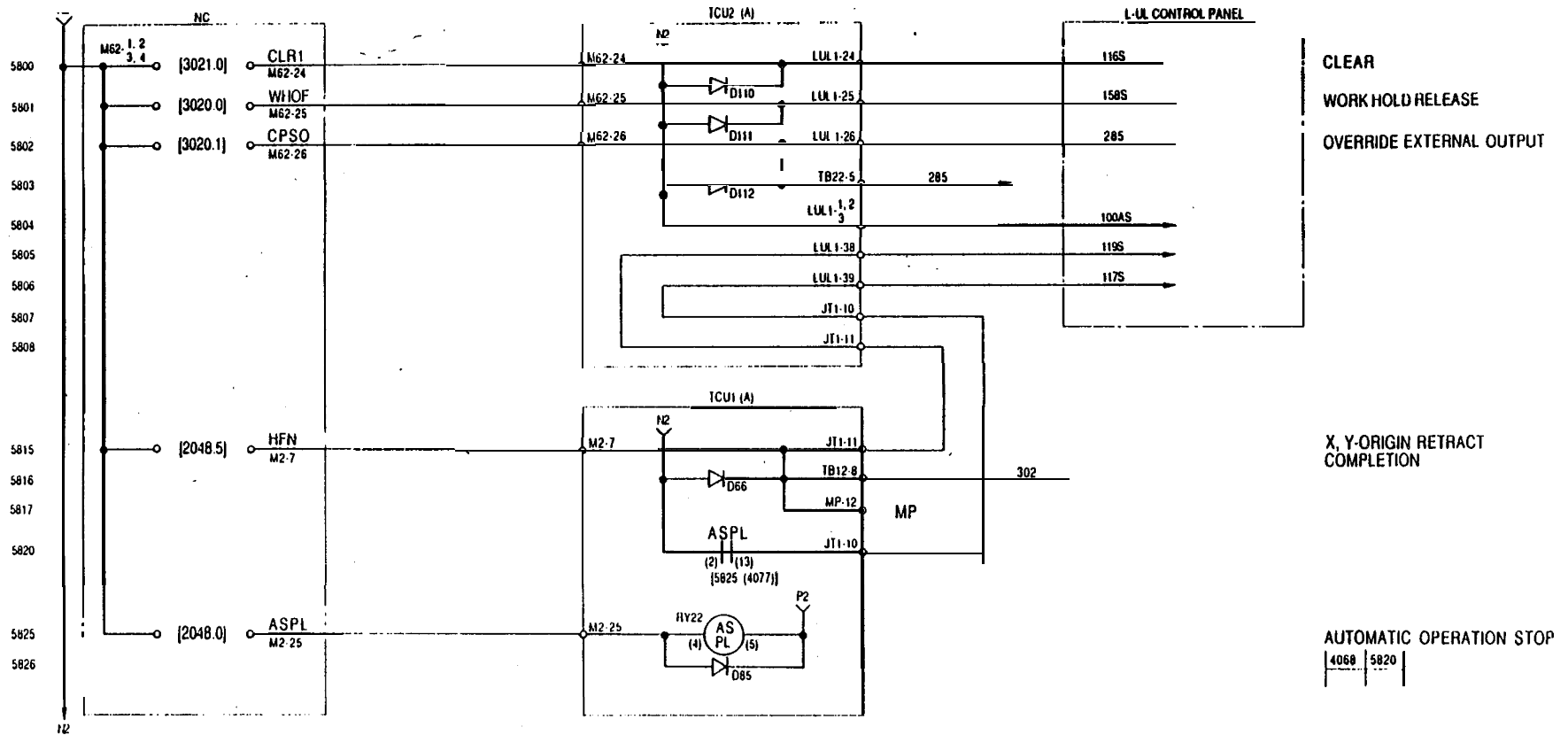


LOADING/UNLOADING 3 [Option (TCU2)]

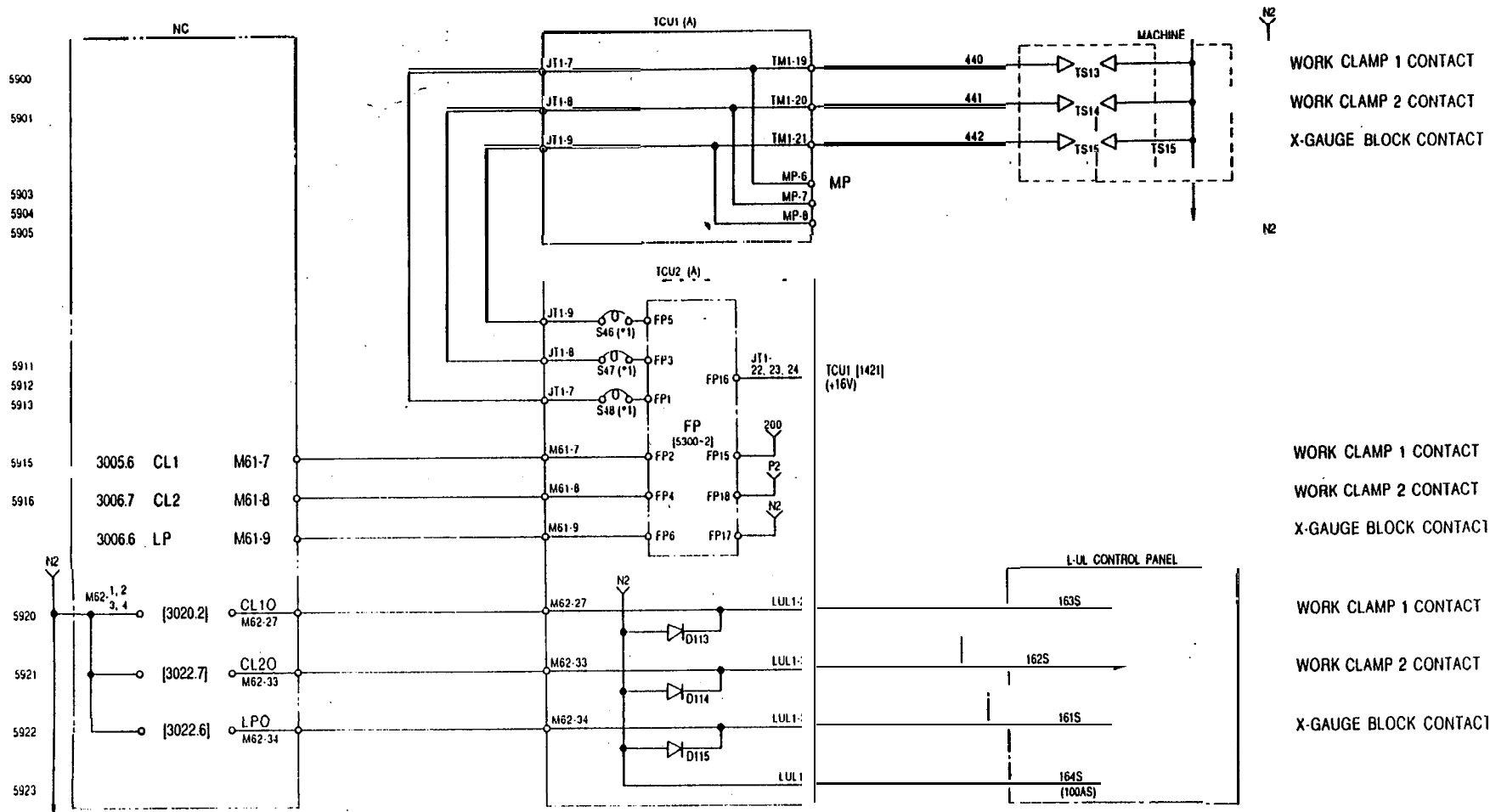


*1: This shall be added when high speed loader is used

LOADING/UNLOADING 4 [Option (TCU2)]



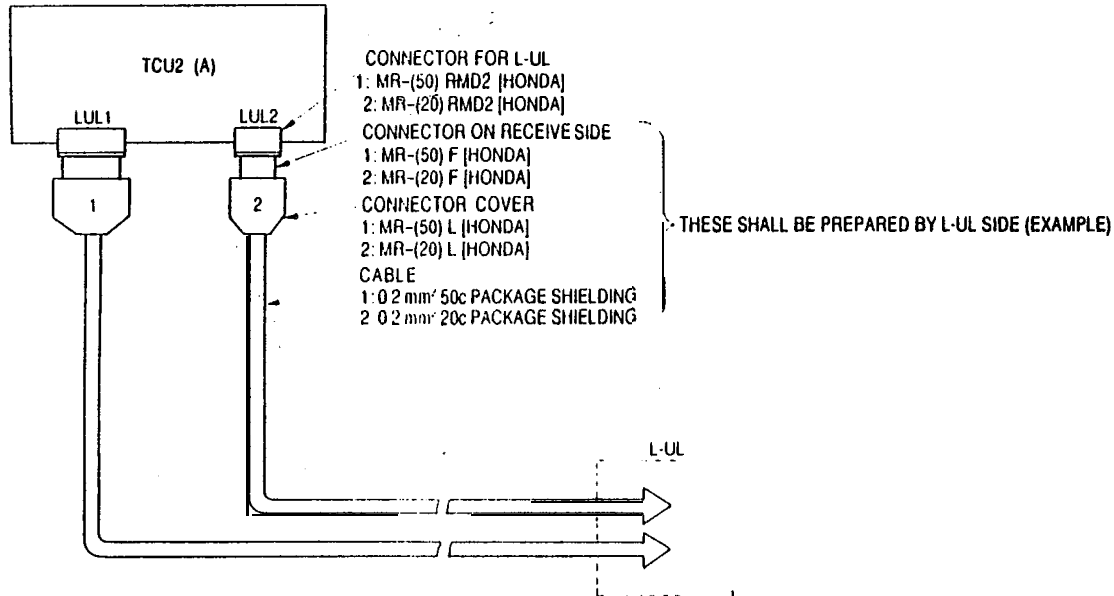
LOADING/UNLOADING 5 [Option (TCU2)]



*1: Have S46 to S48 short-circuited when contact detection and L-UL are in service

LOADING/UNLOADING 6 [Option (TCU2)]

CONNECTION OF THE CONNECTORS FOR L-UL



47

ARRANGEMENT OF THE CONNECTOR PINS FOR L-UL1.

1	2	3	4	5	6	7	8	9	10
N2	N2	N2	N2	AMF	AM28	AM24	AM22	AM21	AM18
100AS	100AS	100AS	164S	101S	138S	108S	107S	106S	105S
11	12	13	14	15	16	17	18	19	20
AM14	AM12	AM11	MAT	SOFFO	USFO	ULZ0	OSUO	AARU	PSWC
104S	103S	102S	109S	100BA	110S	111S	114S	115S	112S
21	22	23	24	25	26	27	28	29	30
PSWH	ASTL	AMA	CLR1	WHOF	CPSO	CL10	NCAM	LLLP	O
113S	118S	139S	116S	158S	28S	163S			
31	32	33	34	35	36	37	38	39	40
O	O	CL20	LPO	USF20	ULZ20	STBDO	11FN	ASPL	O
		162S	161S	154S	155S	156S	119S	117S	
41	42	43	44	45	46	47	48	49	50
TAT	M300	O	O	O	O	L1RMT	O	O	O
142S	143S	144S	145S	146S	147S	129S	130S	137S	149S

MODEL: MR-(50) RMD2 (HONDA)

ARRANGEMENT OF THE CONNECTOR PINS FOR L-UL2.

1	2	3	4	5	6	7	8	9	10
IFH	SCL	MFX	LEFS	AIR	STR	SRU	PTOS	WJST	USF
121S	123S	125S	151S	122S	126S	124S	128S	153S	131S
11	12	13	14	15	16	17	18	19	20
	200	200	YPF	O	LNP	USF2	ULZ2	LCP	LBK
136S	120S	120S	148S	135S	43S	436	431	159S	160S

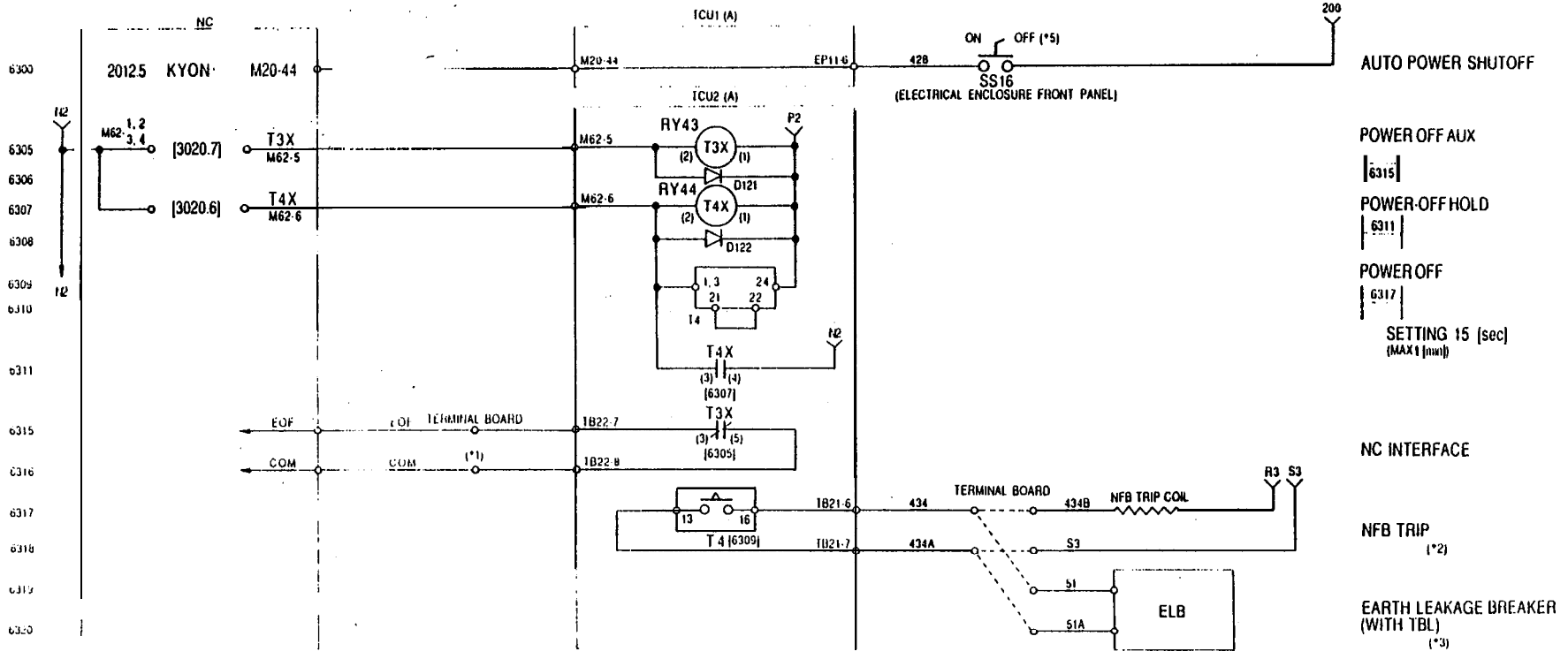
MODEL: MR-(20) RMD2 (HONDA)

CONNECTION OF THE TERMINAL BOARD FOR L-UL.

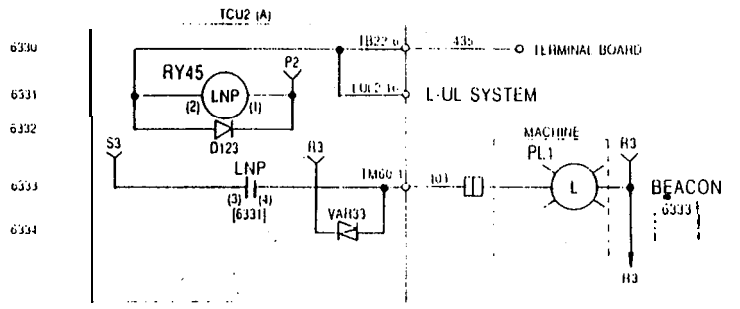
R1	SI	T1	PE
----	----	----	----

MODEL: BN30/4P (IZUMI)
TERMINAL SIZE: M4

AUTO POWER SHUTOFF, BEACON [Option (TCU2)]

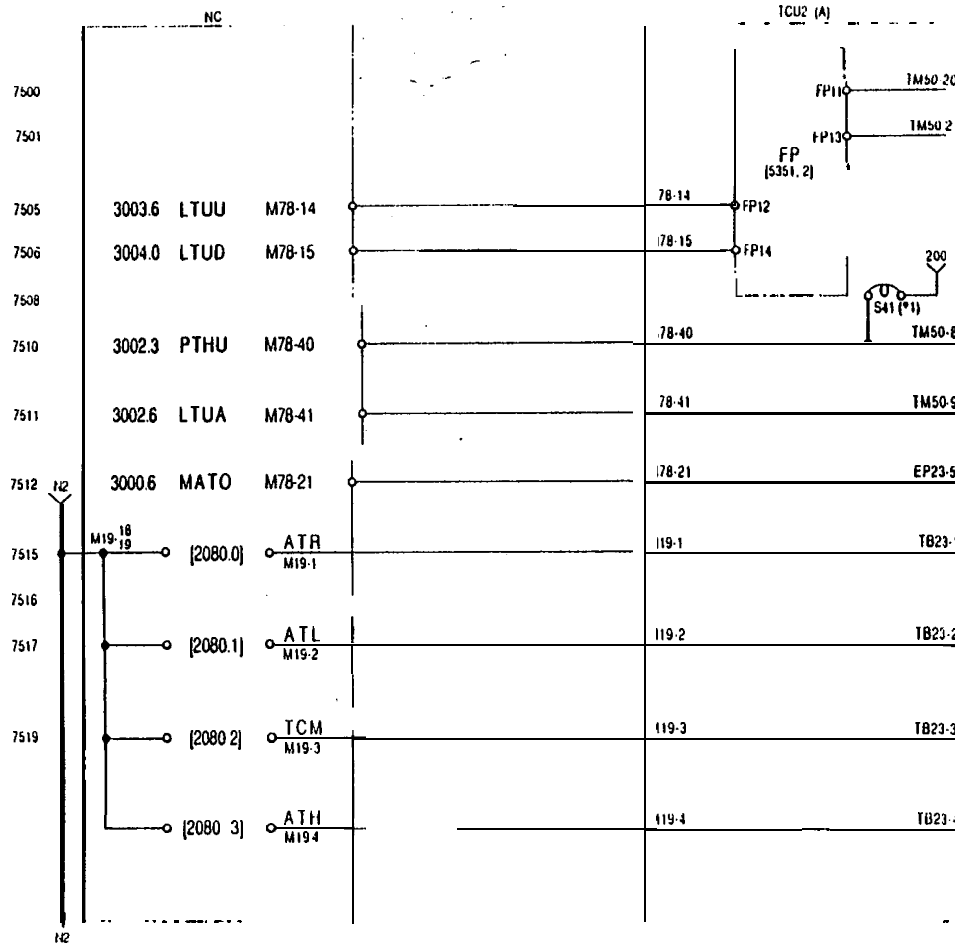


- AUTO POWER SHUTOFF
- POWER OFF AUX
- 6315
- POWER-OFF HOLD
- 6311
- POWER OFF
- 6317
- SETTING 15 [sec]
- (MAX 1 [min])
- NC INTERFACE
- NFB TRIP
- (*)2
- EARTH LEAKAGE BREAKER
- (WITH TBL)
- (*)3



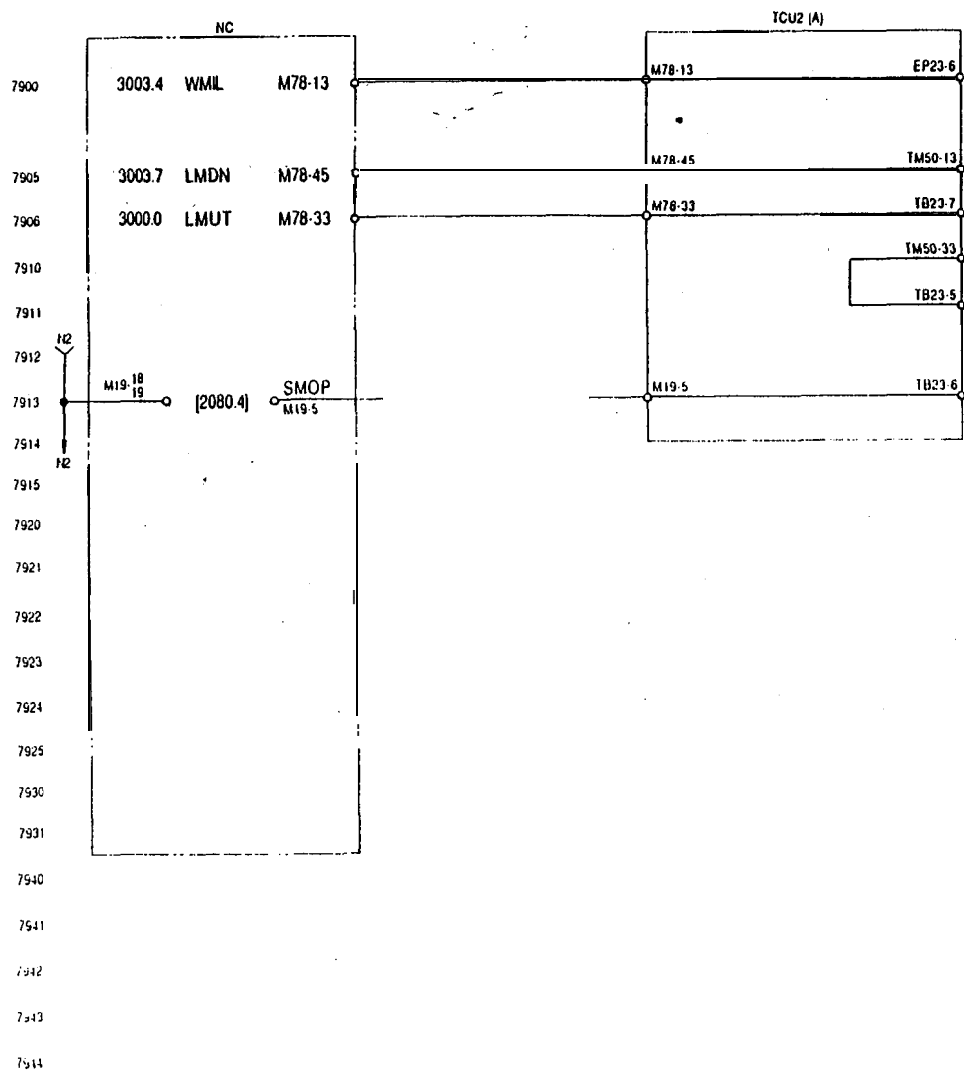
- *1: EOF and COM shall be short-circuited when not used.
- *2: This NFB trip shall be added when its use is specified. (Connect line No. 434 with 434B and 434A with S3)
- *3: This breaker shall be added when its use is specified. (Connect line No. 434 with 51 and No 434A with 51A.)
- *4: MP retrofitting is unavailable when Auto Power Shutoff is in service.
- *5: Normally this is not added when L-UL system is in service.

TCU2 IDLE CONNECTION 1 [Option (TCU2)]



*1: Have S41 short-circuited

TCU2 IDLE CONNECTION 2 [Option (TCU2)]



S O S

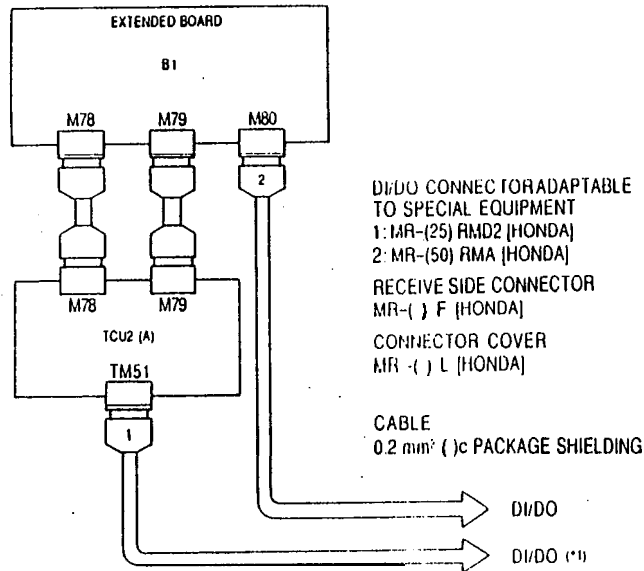
DI/DO ADAPTABLE TO SPECIAL EQUIPMENT 1 [Option (TCU2)]

ARRANGEMENT OF TM51 CONNECTOR PINS

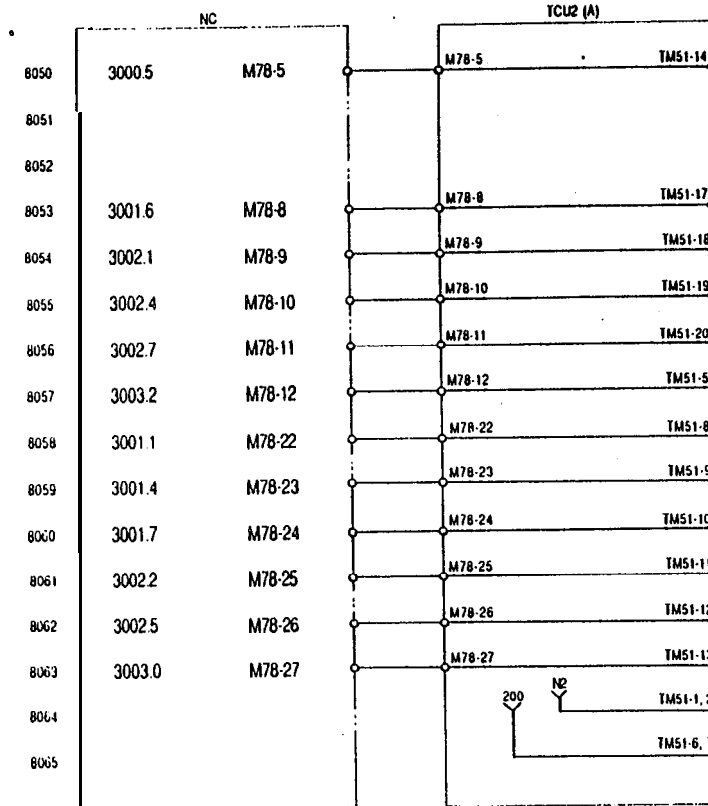
1	2	3	4	5	6	7	8	9	10
N2	N2				200	200			
		M79-15	M79-16	M78-12			M78-22	M78-23	M78-24
11	12	13	14	15	16	17	18	19	20
				X	X				
M78-25	M78-26	M78-27	M78-5			M78-8	M78-9	M78-10	M78-11
21	22	23	24	25					
M79-10	M79-11	M79-12	M79-13	M79-14					

MODEL: MR-(25) RMD2 (HONDA)

CONNECTION OF DI/DO CONNECTOR ADAPTABLE TO SPECIAL EQUIPMENT

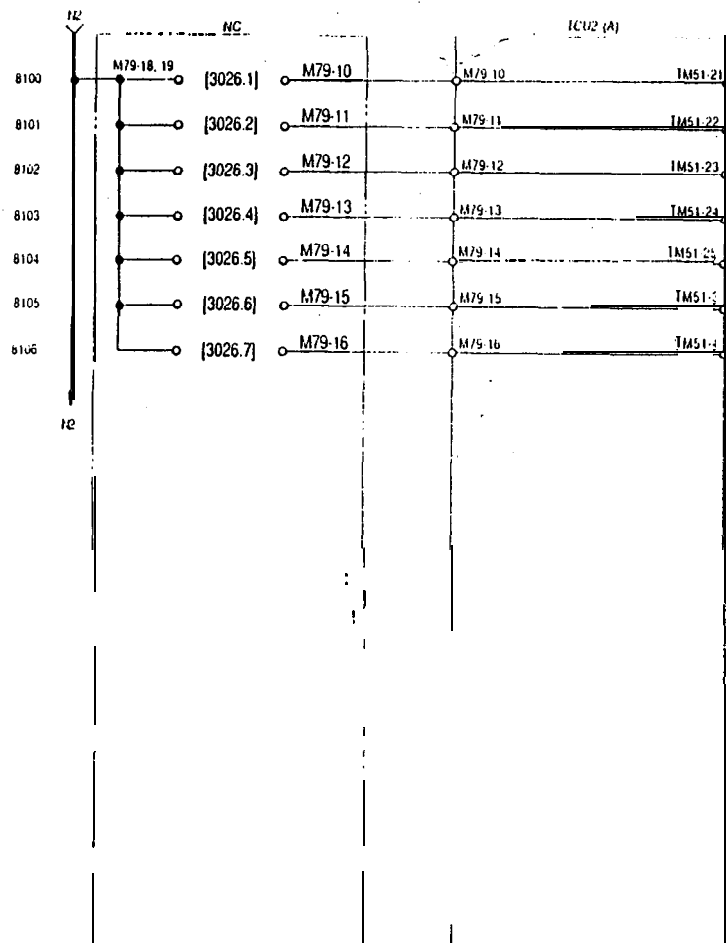


*1: DI of T51 is available when M78 is connected and DO of T51 when M79 is connected



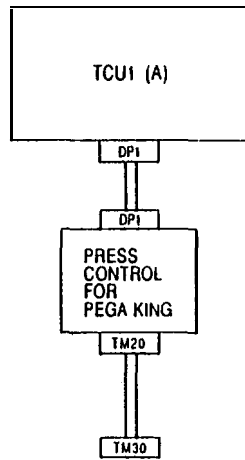
PARTS TO BE PREPARED (EXAMPLE)

DI/DO ADAPTABLE TO SPECIAL EQUIPMENT 2 [Option (TCU2)]



PRESS CONTROL PCB CONNECTION

CONNECTION DIAGRAM



CONNECTOR PIN ARRANGEMENT

TM20

1	2
430C	430D

MODEL: 350539-1 (AMP)

DP1

1	2	3	4
			PF
P2	N2	+16V	

MODEL: 350543-1 (AMP)

LIST OF OPTIONS ACCORDING TO MACHINES

AUTO-INDEX

WORK CHUTE

WORK SELECTOR

X-GAUGE BLOCK

HEAT-PROOF CIRCUIT

SCRAP CONVEYOR

SAFETY MAT

MANUPULATOR RETROFITTING*1

LOADING UNLOADING

AUTO POWER SHUTOFF*2

BEACON

*1 Combination with AUTO POWER SHUTOFF is unavailable.

*2 Combination with MANUPULATOR is unavailable.

LIST OF COMPONENT DEVICES

EQUIPMENT/DEVICE	SYMBOL	LOAD	POWER SUPPLY VOLTAGE				
			200V	230V	400V	460V	580V
			AMPER RATING				
PRESS MOTOR	NFB10 (Auxiliary contact la)	5.5 kW	50A	50A	30A	30A	—
	TH1		21A	18.3A	10.5A	9.1A	7.2A
POWER SUPPLY CIRCUIT (TF1)	Fu10	959VA	15A	15A	8A	8A	5A
	CP2	—	7A				
	CP4	—	7A				
TOP COVER FAN	CP24 (Auxiliary contact 1 c)	50w	1A				
COOLING FAN FOR ELECTRICAL ENCLOSURE	CP23 (Auxiliary contact lc)	13W	0.25A				
BRAKE BLOWER MOTOR (TF3)	NFB14 (Auxiliary contact la)	0.3 kW	5A (200V)				
	TH6		—	1.8A (200V)			
	Fu12	600VA	15A	15A	8A	8A	8A
REAR SIDE FAN	CP26 (Auxiliary contact lc)	54W	1A				
DC24V POWER SUPPLY	Fu15	—	3A				
POWER SUPPLY RECEPTACLE (TF20)	Fu16	1534VA	20A	20A	10A	10A	10A
	CP7	—	5A				
SAFETY MAT (TF4)	Fu13	36.7VA	1-1/2A	1-1/2A	3/4A	3/4A	1/2A
	CP27	—	1A				
SCRAP CONVEYOR MOTOR	NFB12, 13 (Auxiliary contact la)	0.4 kW	5A (200V)				
	TH4, 5		—	2.3A (200V)			

TCU1 SHORT BAR (SW) SETTING TABLE

		S: SHORT-CIRCUIT				O: OPEN				NO MARK: NO RELATIONSHIP									
SYSTEM	SHORT BAR	3	4	5	6	8	9	10	11	12	13	14	15	16	18	19	20	21	22
STANDARD		S	S	O	O	S	S	S	S	O	S	S	O	S	S	S	S	S	S
AUTO-INDEX										S									
FIRST SHEET JUDGEMENT INVALID				S															
HEAT-PROOF CIRCUIT						O													
SAFETY MAT (+Y SIDE)																	O		
SAFETY MAT (-Y SIDE)																	O		
MANIPULATOR RETROFITTING									O										
SAFETY MAT EMERGENCY STOP CONTROL															O				

As to short bar settings to be entered in no mark boxes in the above table, if the item concerned is accompanied with another option, the settings in no mark boxes shall comply with those of that option and, if no other option, then with standard settings.

		SW	
SYSTEM	SHORT BAR	50	51
STANDARD		OFF	OFF

TCU2 SHORT BAR SETTING TABLE (Option)

S: SHORT-CIRCUIT O: OPEN NO MARK: NO RELATIONSHIP

SYSTEM \ SHORT BAR	SHORT BAR														RESERVED						
	30	31	32	33	34	35	36	37	38	39	40	41	42	43	45	46	47	48	49	50	51
GENERAL	S	S	S	S	S	S	S	S	S	S	S	S	S	O	O	O	O	O	O	S	S
LOADING																	S	S	S		
UNLOADING	O																				O
RESERVED													S								

As to short bar settings to be entered in no mark boxes in the above table, if the item concerned is accompanied with another option, the settings in no mark boxes shall comply with those of that option and, if no other option, then with general settings.

ELECTRIC PARTS LIST

	SYMBOL	PARTS NAME	TYPE	MAKER
Page 2	NFB1	Non-fuse breaker	BU-ESB3060L1	Klockner-moeller
	NFB10	Non-fuse breaker	PKZM3-25/U+HI11+C-NA (230V-30A)	Klockner-moeller
	TH1	Thermal relay	PKZM3-16/U+HI11+C-NA (400V-15A) PKZM3-10/U+HI11+C-NA (460V-15A)	Klockner-moeller Klockner-moeller
	MDF	Magnet contactor	SC-1 N/UL AC100V	Fuji
	SK2	Spark killer condenser	RFM2H664KPD	Marukon
	m1	Press motor	YEFOUP-KK 5.5 kW 4P	Hitachi
	Fu10A, Fu10B	Fuse	KTK or KLK (200V-15A) (230V-15A) (400V-8A) (460V-8A) (580V-5A)	Bussman Little fuse
	TF1	Transformer	1 ϕ 959VA 0-200-230-350V, 0-200-230V/ 0-100V 700VA, 0-53V 159VA, 0-18-20-22V 100VA	Sankyo
	CP2	Circuit protector	CP32E/7.5	Fuji
	Rf1	Rectifier	DS10BNL	Mitsubishi
	CP4	Circuit protector	CP32E/7.5 DDC	Fuji
	C1	Capacitor	6800 μ F 63WV	Nihon chemical condenser
	r3	Resistor	100 Ω 20W	Nihon teikouki
Page 3	Fm10	Cooling fan motor	125XR01	Etori
	CP24	Circuit protector	CP31E/1W	Fuji
	Fm15	Cooling fan motor	PN-254-002SC2	Hitachi
	SK1	Spark killer condenser	DCR2-50A22	Marukon
	CP23	Circuit protector	CP31 E/0.25W	Fuji
	CP26	Circuit protector	CP32E/1W	Fuji
	Fm17	Cooling fan motor	SF203-40	Hitachi
Page 4	LS35	Limit switch	LDZ-5312	Yamatake
	PB1	Push button switch	AH30-FB10	Fuji
	SS1	Snap switch	AH30-P2B10	Fuji

SYMBOL	PARTS NAME	TYPE	MAKER
SS2	Snap switch	AH30-P3B11	Fuji
PB2	Push button switch	AH30-G1G10	Fuji
PB2-1	Push button switch	AH30-FG10	Fuji
PB3	Push button switch	AH30-FG10	Fuji
SS7	Snap switch	AH30-P2B01	Fuji
SS7-1	Snap switch	AH30-P2B01	Fuji
PB7	Push button switch	AH30-FY10	Fuji
PB7-1	Push button switch	AH30-FY10	Fuji
PB6	Push button switch	AH30-FY10	Fuji
PB8	Push button switch	AH25-SFG10	Fuji
PB9	Push button switch	AH25-SFG10	Fuji
FTS1	Foot switch	OFL-BS-SM2-KS	Ojiden
PS3	Pressure switch	SPS-8T x 1/4"	Sanwa
PS2	Pressure switch	SPS-8T x 1/4"	Sanwa
PS1	Pressure switch	SPS-8T x 1/4"	Sanwa

	SYMBOL	PARTS NAME	TYPE	MAKER
Page 6	SW1	Select switch	WD-1114	National
	PB4	Push button switch	AH30-V1R01	Fuji
	PB5-1	Push button switch	AH30-E5R01	Fuji
	PB5	Push button switch	AH30-VR01	Fuji
	PB20	Push button switch	AH30-FB10	Fuji
	LS17	Limit switch	14CE3-3J	Yamatake
	LS23	Limit switch	14CE3-3J	Yamatake
	LS22	Limit switch	14CE3-3J	Yamatake
	LS24	Limit switch	ZC-Q2255	Omron
	LS25	Limit switch	LDZ-5312	Yamatake
Page 7	LS27	Limit switch	ZC-Q2255	Omron
	LS26	Limit switch	ZC-Q2255	Omron
	LS29	Limit switch	LDZ-5312	Yamatake
	LS28	Limit switch	LDZ-5312	Yamatake
	LS21	Limit switch	ZC-Q22	Omron
	*LS21-1	Limit switch	CDMU-30-30-591-S	SMC
	SS5	Snap switch	AH30-J2D01A	Fuji
	SS5-1	Snap switch	AH30-J2A01A	Fuji
	*PB10	Push button switch	AH30-VR01	Fuji
	*PB11-1	Push button switch	AH30-VIR01	Fuji
	*PB11	Push button switch	RCa470-VIR1	Fuji
	LS34	Limit switch	U-84MA2	IHI
Page 9	m3	Lubrication motor	SK505	IHI
Page 10	LED4~9	LED	BD1403A	Okaya electric
	LS33	Limit switch	LDZ-5312	Yamatake
	LS32	Limit switch	LDZ-5312	Yamatake
	LS31	Limit switch	ZC-Q2255	Omron
	LS30	Limit switch	ZC-Q2255	Omron

*: OPTIONAL

	SYMBOL	PARTS NAME	TYPE	MAKER
Page 12	LS2	Proximity switch	TL-T5E1-7	Omron
	LS3	Proximity switch	TL-T5E1-7	Omron
	LS11	Proximity switch	TLW-5E1	Omron
	LS12	Proximity switch	TLW-5E1	Omron
	LS13	Proximity switch	TLW-5E1	Omron
	LS14	Proximity switch	TLW-5E1	Omron
	LS6	Proximity switch	TL-X5F2-7	Omron
Page 13	LS8	Proximity switch	TL-X2F1-7	Omron
	LS9	Proximity switch	TL-X2F1-7	Omron
	LS10	Proximity switch	TL-X2F1-7	Omron
	LS1	Proximity switch	TL-T5E1-7	Omron
	LS4	Proximity switch	TL-T5E1-7	Omron
Page 18	Fu15A	Fuse	KTK (3A)	Bussman
	Fu15B		or KLK (3A)	Little fuse
	*Fu15C			
	*Fu15D			
Page 20	*Fu16A	Fuse	KTK	Bussman
	*Fu16B		or KLK	Little fuse
			(230V-10A)	
			(460V-5A)	
	*TF20	Transformer	1φ 575VA TW-575	Sankyo
			0-200-230V, 0-200-230V/	
			0-115V	
	*CP7	Circuit protector	CP32E/5	Fuji
Page 27	*LS80	Limit switch	14CE3-1	Yamatake
	*LS81	Limit switch	14CE3-1	Yamatake
Page 28	*LS58	Proximity switch	TL-X5F3-7	Omron
	*LS59	Proximity switch	TL-X5F3-7	Omron
	*LS60	Proximity switch	TL-X2F1-7	Omron
	*LS61	Proximity switch	TL-X2F1-7	Omron
	*LS62	Proximity switch	TL-X2F1-7	Omron
	*LS63	Proximity switch	TL-X2F1-7	Omron
	*LS64	Proximity switch	TL-X2F1-7	Omron
	*LS65	Proximity switch	TL-X2F1-7	Omron
	*LS66	Proximity switch	TL-X2F1-7	Omron

*: OPTIONAL

	SYMBOL	PARTS NAME	TYPE	MAKER
Page 29	LS72	Limit switch	2LS1-J	Yamatake
	LS73	Limit switch	2LS1-J	Yamatake
	*LS78	Limit switch	ZLS1-J	Yamatake
	*LS79	Limit switch	ZLS1-J	Yamatake
Page 30	*NFB14	Non-fuse breaker		Klockner-moeller
	*TH6	Thermal relay		
	*MBF	Magnet contactor	SRC3631-0/UL	Fuji
	*m17	Cooling fan motor	SF203-40	Towa kinzoku
	*SS6	Select switch	AH22-P2B10	Fuji
	Fu12A	Fuse	KTk	Bussman
	Fu12B		or KLK	Little fuse
	Fu12C		(200V-15A)	
			(230V-15A)	
			(400V-8A)	
			(460V-8A)	
			(580V-8A)	
	SK2	Spark killer condenser	RFM2H664KP-D	Marucon
	TF3	Transformer	1 ϕ 600VA 0-230-400-460V, 0-230-400-460V, 0-230-400-460V/ 0-200V, 0-200V, 0-200V	Sankyo
Page 31	*SS12	Snap switch	AJ-3110	Matsushita
	*TF4	Transformer	1 ϕ 36.7VA TW-36.7 0-200-230V, 0-200-230-350V/ 0-18-20-22V	Sankyo
	*Fu13A	Fuse	KTk	Bussman
	*Fu13B		or KLK	Little fuse
			(200V-1 1/2A)	
			(230V-1 1/2A)	
			(400V-3/4A)	
			(460V-3/4A)	
			(580V-1/2A)	
	*Rf3	Rectifier	S5VB20	Sindengen
	*CP27	Circuit protector	CP31 E/0.5D	Fuji
	*C4	Capacitor	2200 μ F 50WV	Nihon chemical condenser
	*r4	Resistor	100 Ω 20W	Nihon teikouki

*: OPTIONAL

	SYMBOL	PARTS NAME	TYPE	MAKER
Page 32	*r9, *r10	Resistor	100Ω 5W	Nihon teikouki
	*NFB12	Non-fuse breaker	PKZM1-2.4+NHi10-NA	Klockner-moeller
	*TH4	Thermal relay	(200V-5A) (Thermal relay setting 2.3A)	
	*MDS1	Magnet contactor	SRC3631-0/UL	Fuji
	*NFB13	Non-fuse breaker	PKZM1-2.4+NHi10-NA	Klockner-moeller
	*TH5	Thermal relay	(200V-5A) (Thermal relay setting 2.3A)	
	*MDS2	Magnet contactor	SRC3631-0/UL	Fuji
	*SS11	Snap switch	AH22-B3B11	Fuji
Page 34	*SW16	Select switch	AH22-J2B20A	Fuji
Page 42	*LS55	Limit switch	LDZ-5412	Yamatake
	*PB18	Push button switch	AH30-VR01	Fuji
	*PB17	Push button switch	AH30-VR01	Fuji
	*PB17-1	Push button switch	AH30-VR01	Fuji
	*SW10	Select switch		
Page 48	*SS16	Snap switch	AH22-J2A10A	Fuji

*: OPTIONAL

PCB: TCU1

SYMBOL	PARTS NAME	TYPE	MAKER
RY1, 16	Relay	NC4D-P-DC24V	National
RY2~11, 14, 15	Relay	NC2D-P-DC24V	National
RY12, 13, 25, 26 30, 31, 34, 35	Relay	JE1-DC24V	National
RY17~22	Relay	NC2D-DC24V	National
RY23, 24	Relay	NC2D-DC12V	National
RY71	Relay	LA1-001	Omron
RY76	Relay	G2E-187P	Omron
TR16~18, 21~23	Transistor	2SC1815 BL	Toshiba
TR19, 25	Transistor	2SD880Y	Toshiba
TR24	Transistor	2SD1088	Toshiba
ZD33	Zener diode	RD2.0E	NEC
ZD2~4	Zener diode	RD5.6E	NEC
ZD21~32	Zener diode	AU01-8	Hitachi
ZD8	Zener diode	AW01-16	Hitachi
IC1, 2	CMOS	MC14013B	MOTOROLA
IC3	CMOS	MC14011B	MOTOROLA
IC4	CMOS	MC14538B	MOTOROLA
IC5	CMOS	MC14584B	MOTOROLA
IC6	CMOS	MC14073B	MOTOROLA
IC7	Regulator	PC7812H	NEC
D21, 22, 24~29	Diode	1S1588	Toshiba
D19, 23	Diode	V06C	Hitachi
D20	Diode	U05C	Hitachi
D49~73, 77~89	Diode	10D1	Nihon international
LED31~36	LED	GL-3PR5	Sharp
TNR1	Varistor condenser	TNR9G390K	Marukon
CH1, 2	SF coil	SF-T8-50S	TIDK
PHT1~5	Photo coupler	PC713	SSharp
PHT6	Photo coupler	TLP521-1	T o s h i b a
SW6, 7, 11, 13-15	Toggle switch	D-2012P	Nihon kaiheiki
SW50, 51	Dip switch	SM-40000-39	Nihon kaiheiki
VAR1~6, 10~13, 17, 18	Varistor	Z10L221	Ishizuka
C14, 29, 33	Electrolytic capacitor	47 μ /50WV	Nichikon
C15	Electrolytic capacitor	10 μ /50WV	Nichikon
c21	Electrolytic capacitor	100 μ /25WV	Nichikon
C18, 19	Poly-carbonate condenser	0.33 μ /100WV	Siemens
C20	Tantalum condenser	2.2 μ /25WV	Nichikon

SYMBOL	PARTS NAME	TYPE	MAKER
C31, 32	Tantalum condenser	10 μ /35WV	Nichikon
C34	Mylar condenser	0.1 μ /50WV	Nichikon
C13, 16, 17	Ceramic condenser	0.01 μ /25WV	Nichikon
C22~28	Semiconducted ceramic condenser	0.1 μ /25WV	Nichikon
R37, 41, 46, 64	Carbon-covered resistor	RD25S 1.8K 1/4W	TDO
R38, 42, 61, 73~78	Carbon-covered resistor	RD25S 10K 1/4W	TDO
R89, 94	Carbon-covered resistor	RD25S 8.2K 1/4W	TDO
R39, 43, 52, 53, 56	Carbon-covered resistor	RD25S 15K 1/4W	TDO
R44, 62	Carbon-covered resistor	RD25S 51 Ω 1/4W	TDO
R45, 63	Carbon-covered resistor	RD25S 100 Ω 1/4W	TDO
R47, 49	Carbon-covered resistor	RD25S 220 Ω 1/4W	TDO
R48	Carbon-covered resistor	RD25S 82K 1/4W	TDO
R50	Carbon-covered resistor	RD25S 120K 1/4W	TDO
R51	Carbon-covered resistor	RD25S 220K 1/4W	TDO
R54, 58	Carbon-covered resistor	RD25S 470 Ω 1/4W	TDO
R57	Carbon-covered resistor	RD25S 68K 1/4W	TDO
R86, 91	Carbon-covered resistor	RD25S 33 Ω 1/4W	TDO
R87, 92	Carbon-covered resistor	RD25S 6.8K 1/4W	TDO
R96	Carbon-covered resistor	RD25S 2.7K 1/4W	TDO
R95	Carbon-covered resistor	RD25S 3.9K 1/4W	TDO
R98	Carbon-covered resistor	RD25S 1K 1/4W	TDO
R36, 40	Metal-covered resistor	RSF1B 1K 1W	TDO
R82	Metal-covered resistor	RSF1B 2.2K 1W	TDO
R88, 93	Metal-covered resistor	RSF1B 1.5K 1W	TDO
R97	Metal-covered resistor	RSF2B 560 Ω 2W	TDO
R99	Metal-covered resistor	RSF1B 330 Ω 1W	TDO
R136~141	Metal-covered resistor	RSF1B 1.2K 1W	TDO
R90	Metal-covered resistor	RSF2B 390 Ω 2W	TDO

PCB: TCU2 (OPTIONAL)

SYMBOL	PARTS NAME	TYPE	MAKER
RY41, 56~58	Relay	NC2D-DC24V	National
RY42~52, 59	Relay	JE1-DC24V	National
RY53, 54, 55	Relay	NC4D-DC24V	National
RY59	Relay	JE1-DC24V	National
T4	Timer	H3FA-A-DC24V	Omron
TR31~38	Transistor	2SC1815 BL	Toshiba
ZD11~18	Zener diode	RD5.6E	NEC
D31~46	Diode	1S1588	Toshiba
D91~115, 140~147	Diode	10D1	Nihon international
PHT11~19	Photo-coupler	TLP521-1	Toshiba
C40~47	Tantalum condenser	10 μ /35WV	Nichikon
R101, 106, 110 R114, 118, 122 R126, 130	Carbon-covered resistor	RD25S 33 Ω 1/4W	TDO
R107, 111, 115 R119, 123, 127 R131, 102	Carbon-covered resistor	RD25S 6.8K 1/4W	TDO
R104, 109, 113 R117, 121, 125 R129, 133	Carbon-covered resistor	RD25S 8.2K 1/4W	TDO
R152~156	Metal-covered resistor	RSF1B 1.2K 1W	TDO
R108, 112, 116 R120, 124, 128 R132, 103	Metal-covered resistor	RSF1B 1.5K 1W	TDO
R160	Metal-covered resistor	RSF2B 1K 2W	TDO
R105, 164~170	Metal-covered resistor	RSF3B 560 Ω 3W	TDO

PNEUMATIC CIRCUIT

