

CASIO®

Service Manual

(without price)

AP-25/28

APR. 2001



AP-25/28

ELECTRONIC KEYBOARD

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SAFETY NOTICE

CAUTION!
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended
by the appliance manufacturer. Discard used batteries
according to manufacturer's instructions.

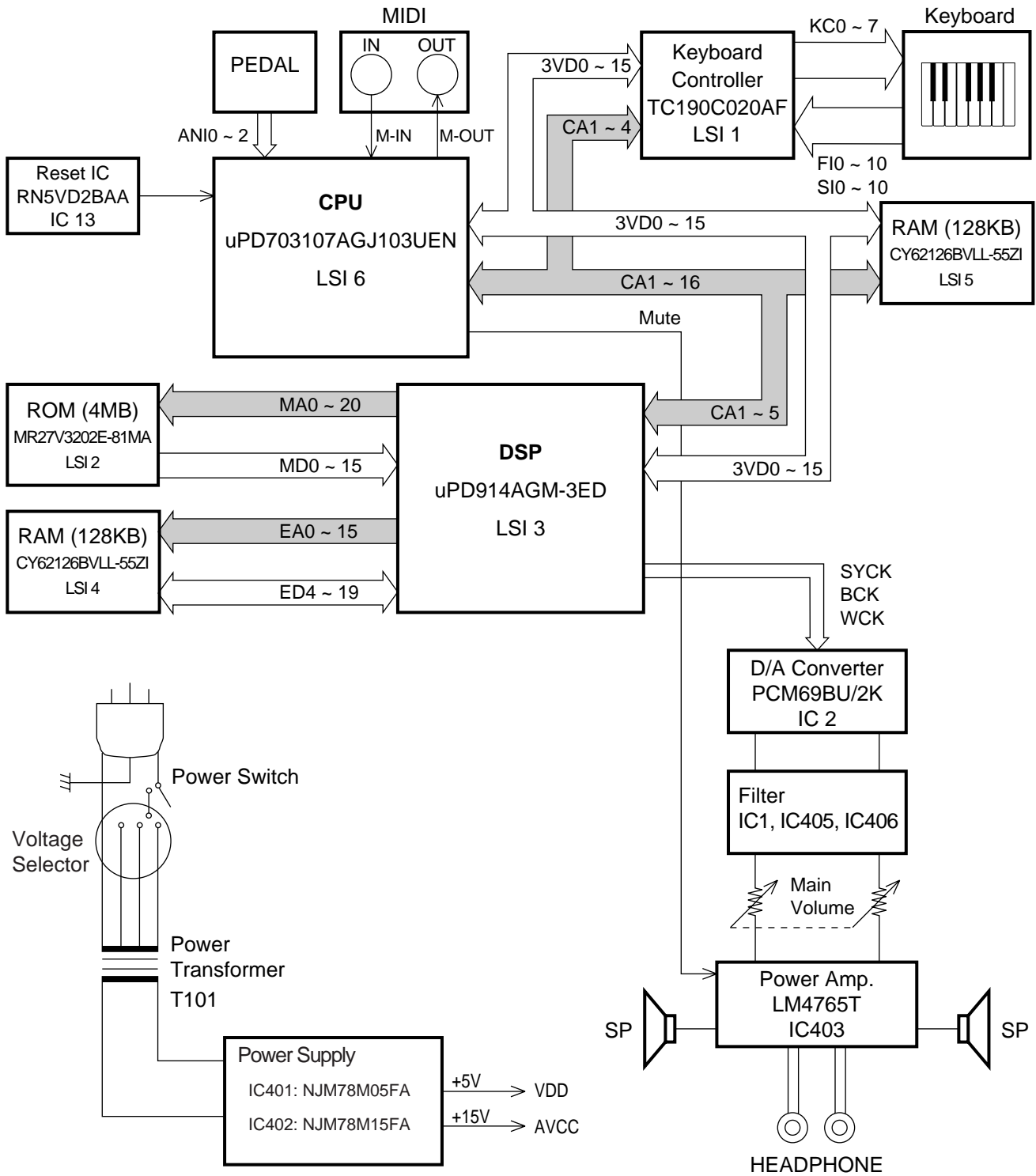
SPECIFICATIONS

GENERAL

Models:	AP-25/AP-25V/AP-28/AP-28V
Keyboard:	88 piano keys (with touch response)
Polyphony:	64 notes, maximum
Tones:	8
Digital Effects:	Reverb (4 types), Chorus
Demo Tunes:	<ul style="list-style-type: none">• Number of Tunes: 8• Playback: Repeat (all tunes, one tune)
Memory:	<ul style="list-style-type: none">• Operations: Real-time recording, playback• Capacity: Approximately 2,500 notes (one song)• Memory Backup: Built-in lithium battery (Battery Life: 5 years)
Pedals:	AP-25/AP-25V: Damper, Soft/Sostenuto (Selectable) AP-28/AP-28V: Damper, Soft, Sostenuto
Other Functions:	<ul style="list-style-type: none">• Metronome: Beat (6 types), Tempo (♩ = 30 to 255)• Touch Select: 3 types, off• Transpose: 1 octave (F# to C to F)• Tuning: A4 = 440Hz \pm50 cents (adjustable)
MIDI:	16 multi-timbre receive
Input/Output:	<ul style="list-style-type: none">• Headphones: Stereo standard jacks \times 2 Output Impedance: 470Ω Output Voltage: 18V (RMS) MAX• MIDI (OUT) (IN)
Speakers:	\varnothing 12cm \times 2 (Output: 20 W + 20 W)
Power Supply:	AP-25/AP-28: 120V AP-25V/AP-28V: 220-240V
Power Consumption:	AP-25/AP-28: 60W AP-25V/AP-28V: 60W
Dimensions:	<ul style="list-style-type: none">• CELVIANO (without stand): 137.0 \times 42.5 \times 19.0 cm (53 $\frac{15}{16}$ \times 16 $\frac{3}{4}$ \times 7 $\frac{1}{2}$ inch)• CELVIANO: 139.0 \times 47.0 \times 81.0 cm (54 $\frac{3}{4}$ \times 18 $\frac{1}{2}$ \times 31 $\frac{7}{8}$ inch)
Weight:	<ul style="list-style-type: none">• CELVIANO (without stand): approximately 34 kg (74.8 lbs)• CELVIANO: approximately 44 kg (96.8 lbs) (AP-25/AP-25V) approximately 44 kg (96.8 lbs) (AP-28/AP-28V)

- Design and specifications are subject to change without notice.
- AP-25 and AP-28 have hardwired power cords.
- AP-25V and AP-28V have detachable power cords.

BLOCK DIAGRAM



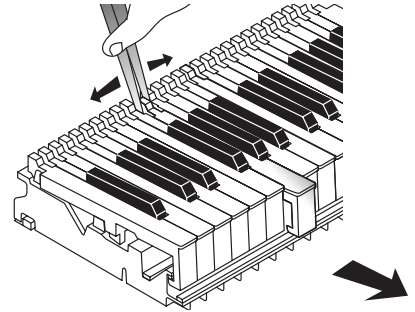
REPLACEMENT OF THE KEYBOARD

- 1) Replacement of the white key / black key
- 2) Replacement of the hammer
- 3) Replacement of the contact rubber
- 4) Other precautions

When the the keyboard needs to be replaced, make sure to check the key touch before replacing it.

1) Replacement of the White key / Black key

1. Expand the rear end of the white key/black key by a pair of tweezers and slide it forward horizontally.

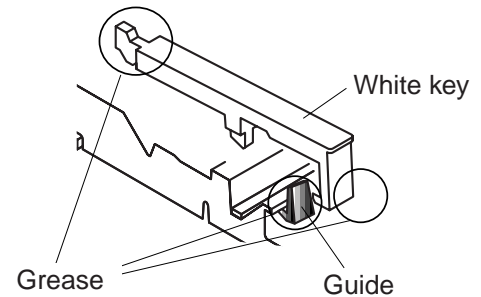


2. Apply proper amount of grease to the inside of the Guide and the front end of the key as well as the rear end of the key.

- * Take extra care of the quantity of the grease, which can easily change the key touch.
- * It is recommended to refer to the quantity of the grease which is applied to the neighboring keys.

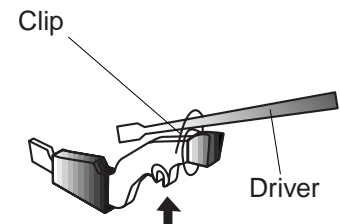
3. After replacing the key, put the front end of the key back into the Guide and slide it backward horizontally.

- * Take extra care not to make any scratches in the inside of the front end of the key and the Guide.



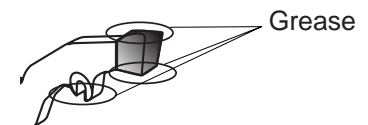
2) Replacement of the Hammer

1. If no jig is available when disassembling, use a driver and a big clip. Then, lift the hammer up and remove it like a lever.



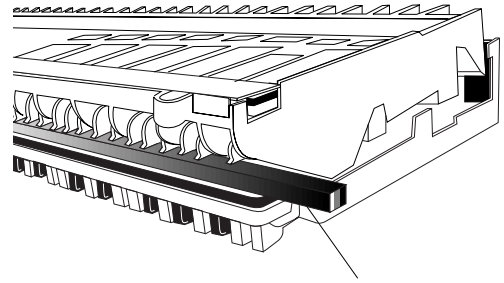
2. Apply the grease (G501) thinly to the top and bottom of the front end as well as the fulcrum of the hammer.

- * It is recommended to refer to the quantity of the grease which is applied to the other hammers when disassembling.



3) Replacement of the contact rubber. (A Jig is necessary)

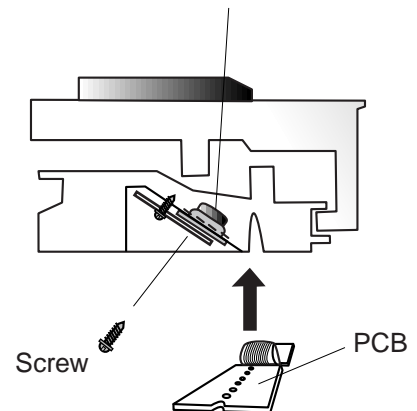
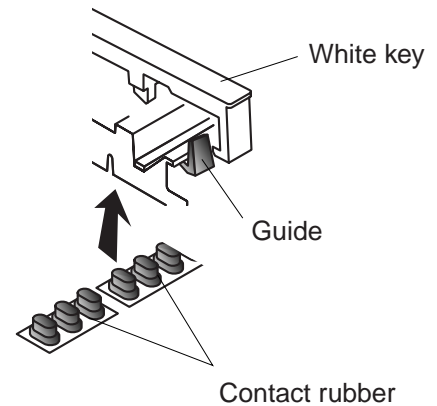
Since the contact rubber is replaced with the keyboard (both white keys and black keys) turned upside down, a jig is necessary to prevent from various troubles caused by the fact that the keys are pushed down.



Jig (lumber)
10 mm × 10 mm

Precautions when replacing the contact rubber

1. Make sure that the keys are NOT pushed down.
2. Make sure that the contact rubber is attached to the frame in the right position.
3. When assembling, take extra care that the contact rubber can often be slipped or twisted at the ends of the rubber itself and the PCB.
4. Make sure that the screw is fixed vertically to the PCB since the key PCB is fixed at an angle (see the right figure).
5. The key touch may change if the above precautions are not followed.



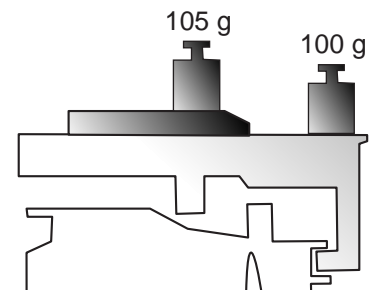
4) Other precautions

Initial load inspection of the keyboard

1. Check if the keys go down with the load put on them (100g for the white key and 105g for the black key).

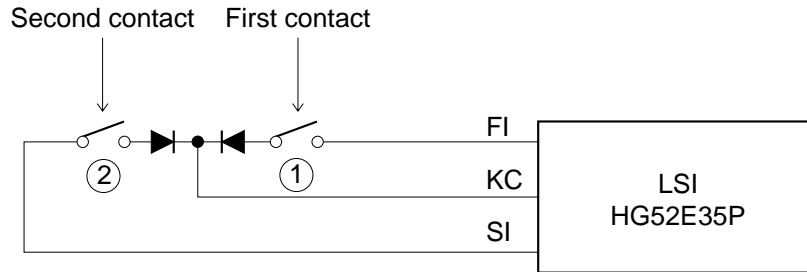
Maintenance of the keyboard unit

1. Never keep the keyboard unit upside down, since the contact rubber may be stuck to the PCB.



CIRCUIT DESCRIPTION

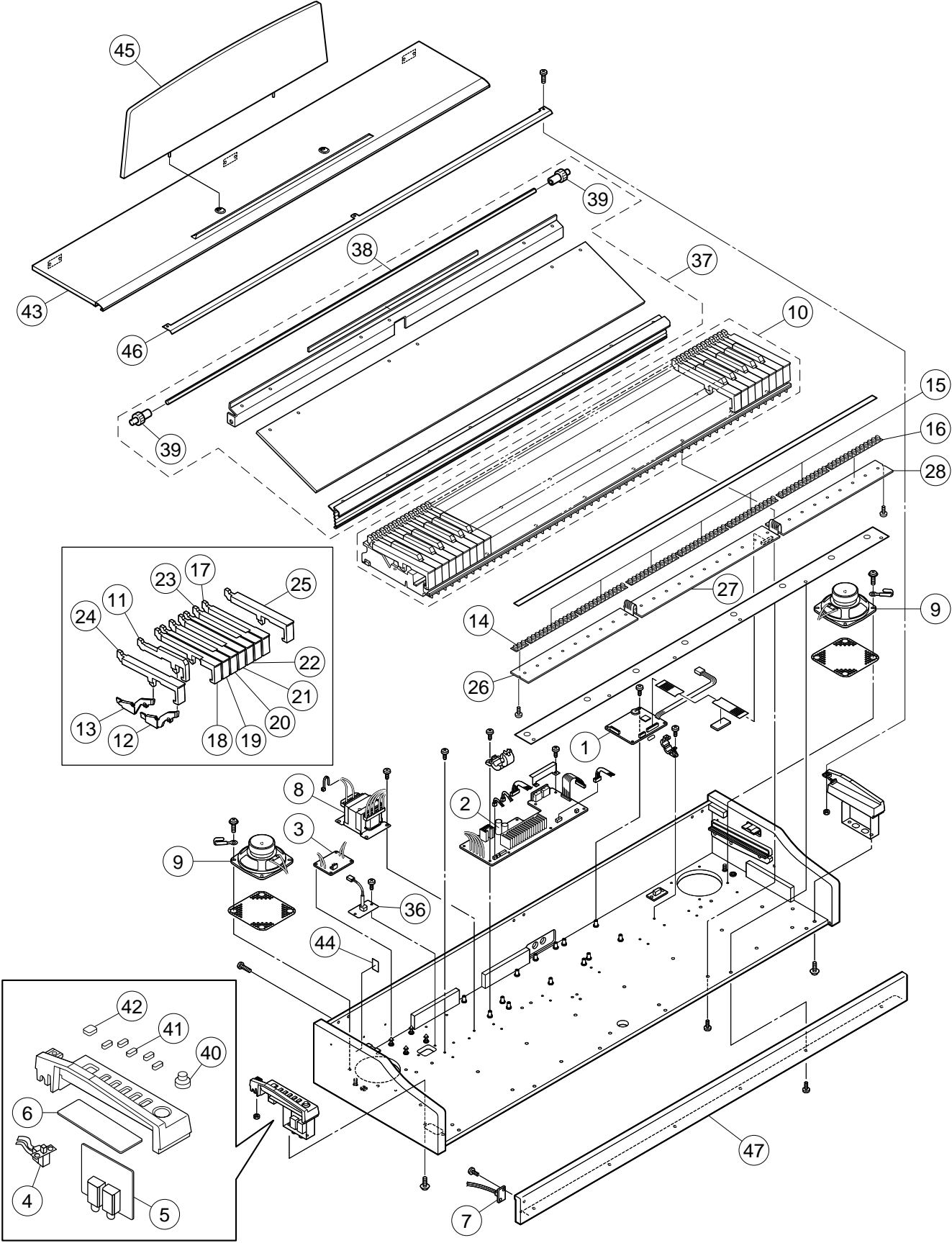
KEY MATRIX



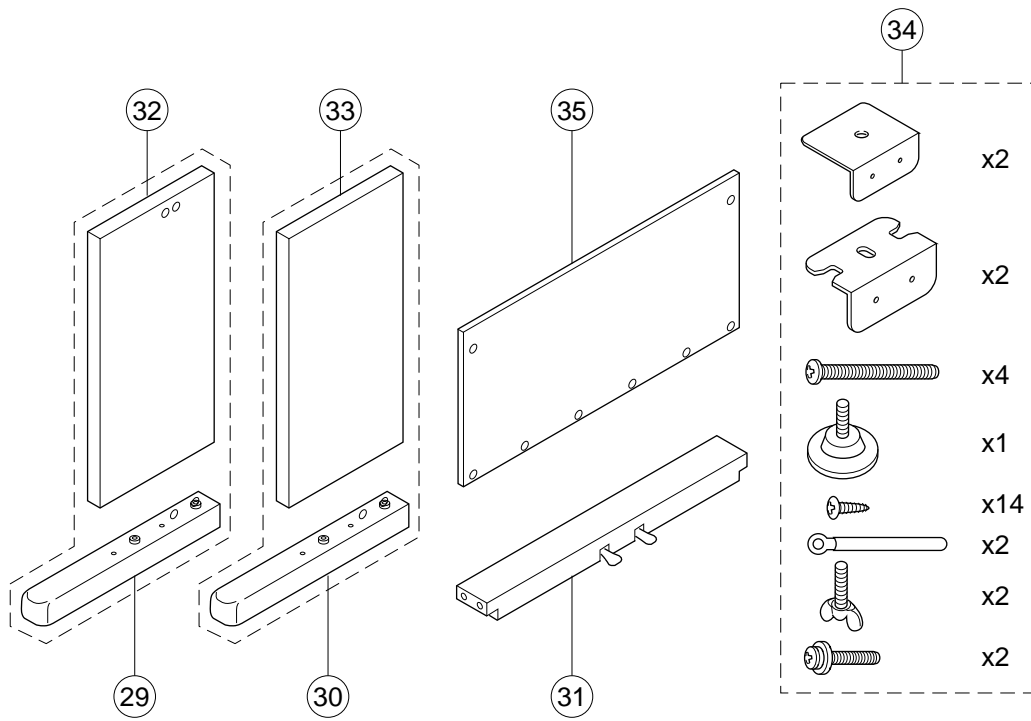
	KC0	KC1	KC2	KC3	KC4	KC5	KC6	KC7
FI0	A0 ①	A0 # ①	B0 ①	C1 ①	C1 # ①	D1 ①	D1 # ①	E1 ①
SI0	A0 ②	A0 # ②	B0 ②	C1 ②	C1 # ②	D1 ②	D1 # ②	E1 ②
EI1	F1 ①	F1 # ①	G1 ①	G1 # ①	A1 ①	A1 # ①	B1 ①	C2 ①
SI1	F1 ②	F1 # ②	G1 ②	G1 # ②	A1 ②	A1 # ②	B1 ②	C2 ②
FI2	C2 # ①	D2 ①	D2 # ①	E2 ①	F2 ①	F2 # ①	G2 ①	G2 # ①
SI2	C2 # ②	D2 ②	D2 # ②	E2 ②	F2 ②	F2 # ②	G2 ②	G2 # ②
FI3	A2 ①	A2 # ①	B2 ①	C3 ①	C3 # ①	D3 ①	D3 # ①	E3 ①
SI3	A2 ②	A2 # ②	B2 ②	C3 ②	C3 # ②	D3 ②	D3 # ②	E3 ②
FI4	F3 ①	F3 # ①	G3 ①	G3 # ①	A3 ①	A3 # ①	B3 ①	C4 ①
SI4	F3 ②	F3 # ②	G3 ②	G3 # ②	A3 ②	A3 # ②	B3 ②	C4 ②
FI5	C4 # ①	D4 ①	D4 # ①	E4 ①	F4 ①	F4 # ①	G4 ①	G4 # ①
SI5	C4 # ②	D4 ②	D4 # ②	E4 ②	F4 ②	F4 # ②	G4 ②	G4 # ②
FI6	A4 ①	A4 # ①	B4 ①	C5 ①	C5 # ①	D5 ①	D5 # ①	E5 ①
SI6	A4 ②	A4 # ②	B4 ②	C5 ②	C5 # ②	D5 ②	D5 # ②	E5 ②
FI7	F5 ①	F5 # ①	G5 ①	G5 # ①	A5 ①	A5 # ①	B5 ①	C6 ①
SI7	F5 ②	F5 # ②	G5 ②	G5 # ②	A5 ②	A5 # ②	B5 ②	C6 ②
FI8	C6 # ①	D6 ①	D6 # ①	E6 ①	F6 ①	F6 # ①	G6 ①	G6 # ①
SI8	C6 # ②	D6 ②	D6 # ②	E6 ②	F6 ②	F6 # ②	G6 ②	G6 # ②
FI9	A6 ①	A6 # ①	B6 ①	C7 ①	C7 # ①	D7 ①	D7 # ①	E7 ①
SI9	A6 ②	A6 # ②	B6 ②	C7 ②	C7 # ②	D7 ②	D7 # ②	E7 ②
FI10	F7 ①	F7 # ①	G7 ①	G7 # ①	A7 ①	A7 # ①	B7 ①	C8 ①
SI10	F7 ②	F7 # ②	G7 ②	G7 # ②	A7 ②	A7 # ②	B7 ②	C8 ②

EXPLODED VIEW

CABINET



STAND



PARTS LIST

AP-25/28

Notes: This parts list does not include the cosmetic parts, which parts are marked with item No. "R-X" in the exploded view.

Contact our spare parts department if you need these parts for refurbish.

1. Prices and specifications are subject to change without prior notice.
2. As for spare parts order and supply, refer to the "GUIDEBOOK for Spare parts Supply", published separately.
3. The numbers in item column correspond to the same numbers in drawing.

AP-25, AP-28 PARTS PRICE LIST

Item	Code No.	Part Name	Specification	Q	Price Code	R	Remarks
Main PCB							
	1	1005 2246	PCB ASSY/M427-MA1M	TK-M241553*1(M427)	1	EF	A
BT1		3815 0679	BATTERY/LITHIUM	CR2032/1HF1	1	AG	B
IC1		2114 1218	IC/MONOLITHIC	NJM2068MD(T1)	1	AD	B
IC10		2105 5824	IC/L-MOS	TC7SH32FU(TE85L)	1	AB	B
IC11		2105 3773	IC/L-MOS	TC7SH08FU(TE85L)	1	AB	B
IC12		2105 3696	IC/L-MOS	TC7SH04FU(TE85L)	1	AB	B
IC13		1004 7449	IC/MOS	RN5VD28AA-TR	1	AC	B
IC14		2105 5712	IC/L-MOS	TC7S04FU(TE85L)	1	AB	B
IC2		1000 8350	LSI	PCM69BU/2K	1	BA	A
IC3		1002 1416	IC/MOS	RN5RF35BA-TR	1	AE	B
IC4,IC9		2105 6389	IC/L-MOS	TC7SET04FU(TE85L)	2	AD	B
IC5		2105 6083	IC/L-MOS	TC7WU04FU(TE12L)	1	AD	B
IC6		2105 6394	IC/L-MOS	TC7SET08FU(TE85L)	1	AB	B
IC7,IC8		2105 6576	IC/C-MOS	TC74LCX245FT(EL)	2	AF	B
LSI1		2012 5987	LSI	TC190C020AF-001	1	BC	A
LSI2		1004 9737	LSI	MR27V3202E-81MA-N	1	BT	A
LSI3		1005 4502	LSI	UPD914AGM-3ED	1	CK	A
LSI4		1004 3417	LSI	CY62126BVLL-55ZIT	2	BR	A
LSI6		1004 9738	LSI	UPD703107GJ014-UEN	1	CE	A
Q1		2259 2702	TRANSISTOR	2SB1188T100Q	1	AB	B
Q2		2253 0715	TRANSISTOR	2SD1664T100R	1	AA	B
Q3		2250 1162	TRANSISTOR	2SA1576AT106R	1	AA	B
Q4		2250 1605	TRANSISTOR	2SC4081T106S	1	AA	B
Q5		2250 1162	TRANSISTOR	2SA1576AT106R	1	AA	B
X1		1004 7439	OSCILLATOR/CERAMIC	CSTCV16.00MXJ0C4-T	1	AC	B
X2		1002 1357	OSCILLATOR/CRYSTAL	DSX151GA-22.5792M	1	AS	B
X3		1004 7438	OSCILLATOR/CERAMIC	CSTCR5M00G35-R0	1	AC	B
Power supply PCB							
	2	1005 2244	PCB ASSY/M427-PS2M	TK-M241554*1(M427)	1	CE	A 120V area
	2	1005 4065	PCB ASSY/M427-PS2M	TK-M241554*2(M427)	1	CE	A 230V area
D401-D404		1003 6785	DIODE	2A02B	4	AA	B
D405-D408		2390 3022	DIODE	3BZ41(LC6-15)	4	AD	B
D409-D412, D414-D415		2315 3132	DIODE	1SS133T-77	6	AA	B
D413		1003 8115	DIODE/ZENER	MTZJT-775.6B	1	AA	B
D416		2390 2828	DIODE	RB441Q-40T-77	1	AA	B
F401		1005 2231	FUSE	51MS010L	1	AC	A 120V area
F401		1005 4029	FUSE	50T010H	1	AC	A 230V area
F402,F403		1005 2230	FUSE	51MS040L	2	AC	A 120V area
F402,F403		1005 4030	FUSE	50T040H	2	AC	A 230V area
IC401		2114 5796	IC/MONOTITHIC	NJM78M05FA	1	AE	B
IC402		2114 5794	IC/MONOTITHIC	NJM78M15FA	1	AE	B
IC403		1004 3418	IC/MONOTITHIC	LM4765T	1	BC	B
IC404		2114 1421	IC/PHOTO COUPLER	PC900V	1	AK	B
IC405-IC406		2121 0072	IC/MONOTITHIC	NJM2068DD	2	AD	B
J401		3501 4816	JACK/DIN	YKF51-5051	1	AH	B
Q401-Q403•Q405		2250 1627	TRANSISTOR	2SC1740STPS	4	AA	B

Notes: Q - Quantity per unit

R - Rank

Item	Code No.	Part Name	Specification	Q	Price Code	R	REMARKS
PS12,PS3,PS4M PCB's							
F400 F400 J402,J403	3	1005 4068	PCB ASSY/M437-PS1	TK-M341450*2(M427)	1	CL	B 120V area
	3	1005 4069	PCB ASSY/M437-PS1	TK-M341450*3(M427)	1	CL	B 230V area
	4	1005 2252	SWITCH ASSY/POWER	TK-M341447*1(M427)	1	AY	C
	5	1005 2253	PCB ASSY/M427-PS3M	TK-M341444*1(M427)	1	CE	B
	6	1005 2251	PCB ASSY/M427-PS4M	TK-M341445*1(M427)	1	CE	B
	7	1005 2248	PCB ASSY/M427-PS5M	TK-M341446*1(M427)	1	CE	B
		1004 7508	FUSE	50T025H	1	AC	A 230V area
		1004 7399	FUSE	51MS032L	1	AC	A 120V area
	1004 7514	JACK/PHONE	YKB22-5078	2	AG	A	
	1005 2243	PCB ASSY/FRONT BOARD	TK-M241577*1(M427)	1	CE	B	
Other electrical parts							
	8	1005 4031	TRANSFORMER	TE-427-1M1	1	CW	B 120V area
	8	1005 4032	TRANSFORMER	TE-427-2M1	1	CW	B 230V area
	9	1005 2227	SPEAKER	S12J99A	2	CD	C
		1004 7593	2P-CONNECTOR-M437NW	EH-2P-45-M437	2	AB	C
		1005 2225	CORE/FERRITE	TFCK-16-8-13	2	AQ	C
		1005 2224	CORE/FERRITE	TFCK-23-11-14	1	AR	C
Keyboard unit							
	10	1004 6083	KEY ASSY	M141175*1 TK(MLMP2)	1	EM	B
	11	6927 4030	BLACK KEY	M140784-1	36	AG	A
	12	1005 2300	HAMMER ASSY/BLACK KEY (R)	M341438*1 TK(MLMP)	9	BH	B
	12	1005 2301	HAMMER ASSY/BLACK KEY (G)	M341439*1 TK(MLMP)	9	BH	B
	12	1005 2309	HAMMER ASSY/BLACK KEY (BK)	M341440*1 TK(MLMP)	9	BH	B
	12	1005 2310	HAMMER ASSY/BLACK KEY (BL)	M341441*1 TK(MLMP)	9	BH	B
	13	1005 2296	HAMMER ASSY/WHITE KEY (R)	M341434*1 TK(MLMP)	13	BH	B
	13	1005 2297	HAMMER ASSY/WHITE KEY (G)	M341435*1 TK(MLMP)	13	BH	B
	13	1005 2298	HAMMER ASSY/WHITE KEY (BK)	M341436*1 TK(MLMP)	13	BH	B
	13	1005 2299	HAMMER ASSY/WHITE KEY (BL)	M341437*1 TK(MLMP)	13	BH	B
	14	6928 4470	RUBBER/CONTACT	M240957-2	1	AE	A
	15	6928 4480	RUBBER/CONTACT	M240958-2	6	AH	A
	16	6928 4490	RUBBER/CONTACT	M240959-2	1	AH	A
	17	6927 4090	WHITE KEY/A	M140789-1	7	AH	A
	18	6927 4100	WHITE KEY/B	M140790-1	8	AI	A
	19	6927 4040	WHITE KEY/C	M140783-1	7	AH	A
	20	6927 4050	WHITE KEY/D	M140785-1	7	AI	A
	21	6927 4060	WHITE KEY/E	M140786-1	7	AH	A
	22	6927 4070	WHITE KEY/F	M140787-1	7	AI	A
	23	6927 4080	WHITE KEY/G	M140788-1	7	AH	A
	24	6927 4110	WHITE KEY/SA	M140792-1	1	AM	A
	25	6927 4120	WHITE KEY/SC	M140791-1	1	AN	A
	26	6928 5460	PCB ASSY M887T-KY1M	M240951A*1	1	BO	C
	27	6928 5470	PCB ASSY M887T-KY2M	M240952A*1	1	BT	C
	28	6928 5480	PCB ASSY M887T-KY3M	M241019A*1	1	BM	C
		6927 4011	CAP/GUIDE/WHITE KEY	M340958A-1	13	AE	C
		6927 4020	CAP/GUIDE/BLACK KEY	M340959-1	36	AA	C
		1005 4481	CHASSIS SUB ASSY	M140831E*1	1	CV	C

Notes: Q - Quantity per unit

R - Rank

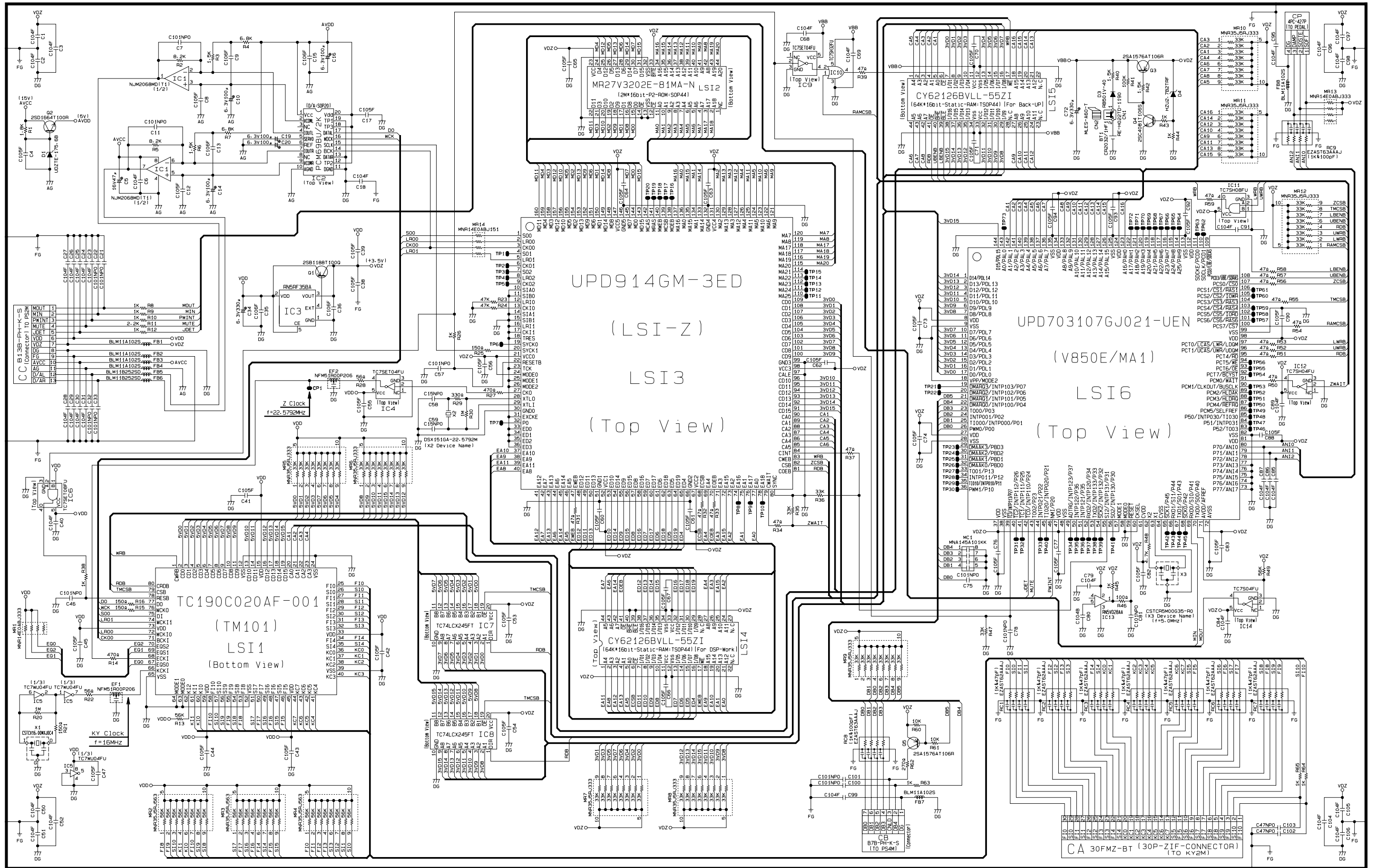
Item	Code No.	Part Name	Specification	Q	Price Code	R	REMARKS
Stand							
29	1005 2239	FOOT SUB ASSY	M341409A*1(M427)	1	CT	C	Left
30	1005 2238	FOOT SUB ASSY	M341409A*2(M427)	1	CT	C	Right
31	1005 2237	PEDAL-SUB ASSY	M241584A*1(M427)	1	CP	C	AP-28/3 Pedal
31	1005 4064	PEDAL-SUB ASSY	M241584A*2(M427)	1	CP	C	AP-25/2 Pedal
32	1005 2236	ST-SIDE SUB ASSY	M341472*1(M427)	1	CV	C	Left
33	1005 2235	ST-SIDE SUB ASSY	M341472*2(M427)	1	CV	C	Right
34	1005 2221	SCREW SET	M241589-1	1	BN	X	
35	1005 2220	BT-BACK-427	M2411392-1	1	CE	X	
AC cord							
36	1005 4071	AC-CORD-ASSY	TK-M341449*2	1	AW	C	120V area
36	1005 4067	INLET ASSY/2P-AC	TK-M341448*1(M437)	1	AT	C	230V area
	1004 5709	CORD SET	UC2NC-M001A	1	AK	C	USA, Canada
	1004 5706	CORD-SET	EC2NC-M001A	1	AM	C	Europe
	1004 5707	CORD-SET	BC2NC-M001A	1	BD	C	UK
Other parts							
37	1005 2240	COVER ASSY/KEY	TK-M241573*1(M427)	1	CO	X	
38	1004 5692	SHAFT	M441204-1	1	BI	C	
39	6924 5140	GEAR	4247002100	2	AC	C	
40	1005 2232	KNOB/VOLUME	M341402-1	1	AE	C	
41	1004 7851	BUTTON/RUBBER	M241515-1	1	AC	C	
42	6924 5260	BUTTON/POWER	M340318-1	1	AA	C	
43	1005 2241	BOARD ASSY/TOP	TK-M241574*1(M427)	1	DE	X	
44	1001 4480	STOPPER	M440862A-1	1	AA	C	
45	1005 2234	STAND ASSY/MUSIC	TK-M241576*1(M427)	1	CH	X	
45	1005 4066	STAND ASSY/MUSIC	TK-M241576*2(M427)	1	CV	X	AP-25 USA, Canada
46	1005 2242	PANEL ASSY/CN	TK-M341456*1(M427)	1	AR	X	AP-25
46	1005 4070	PANEL ASSY/CN	TK-M341456*2(M427)	1	AI	X	AP-28
47	1005 2243	PCB ASSY/FRONT BOARD	TK-M241577*1(M427)	1	CE	B	

Notes: Q - Quantity per unit

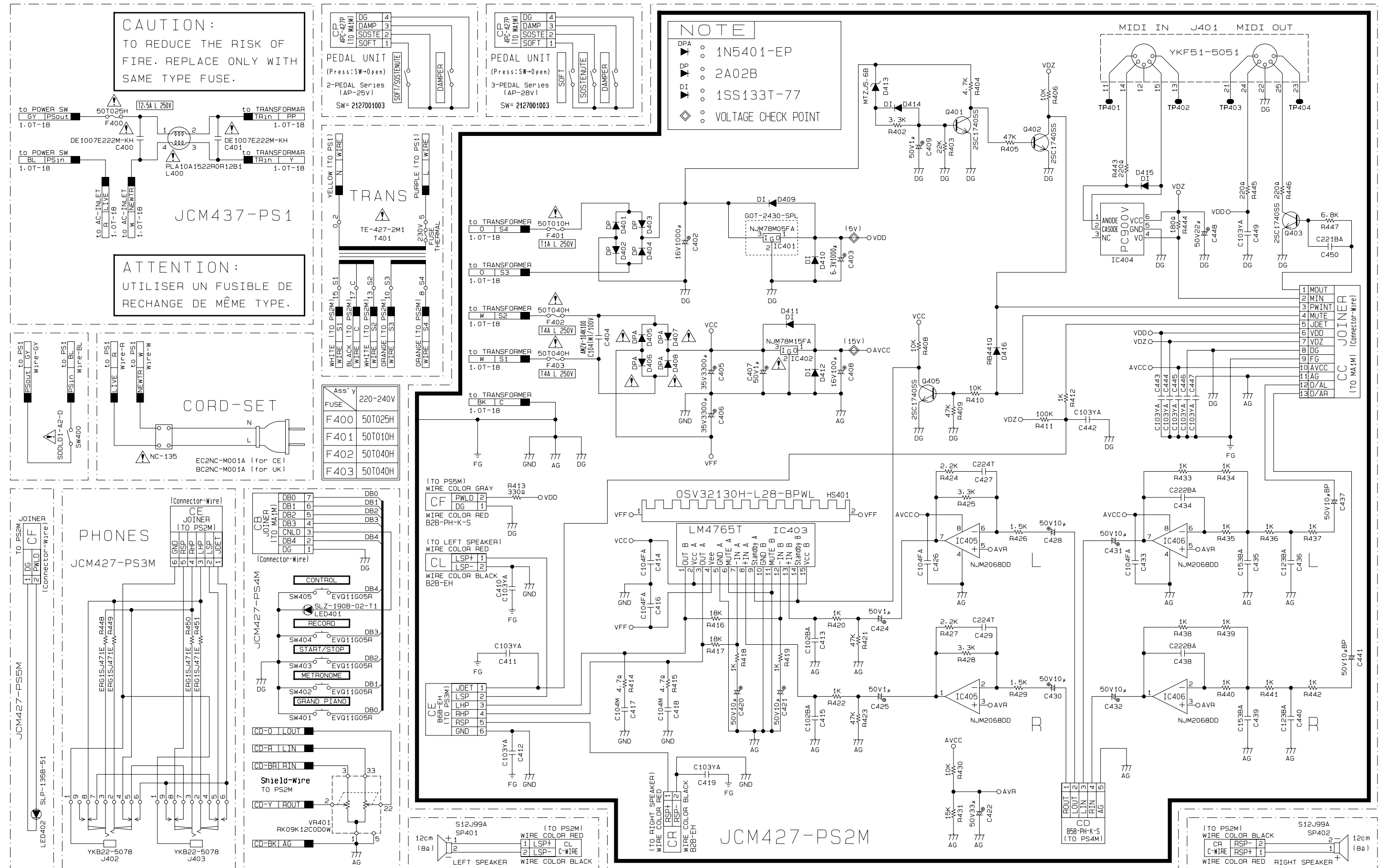
R - Rank

SCHEMATIC DIAGRAMS

MAIN PCB JCM427-MA1M



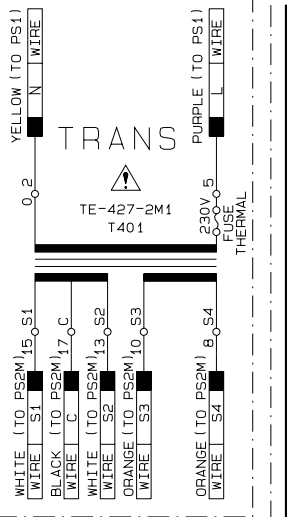
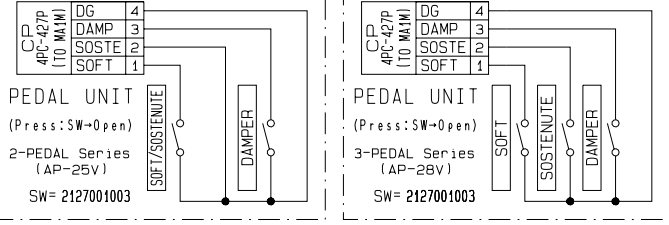
I/O and POWER SUPPLY(230 V) PCB JCM427-PS1/PS2M/PS3M/PS4M/PS5M



CAUTION:
TO REDUCE THE RISK OF
FIRE. REPLACE ONLY WITH
SAME TYPE FUSE.

ATTENTION:
UTILISER UN FUSIBLE DE
RECHANGE DE MÊME TYPE.

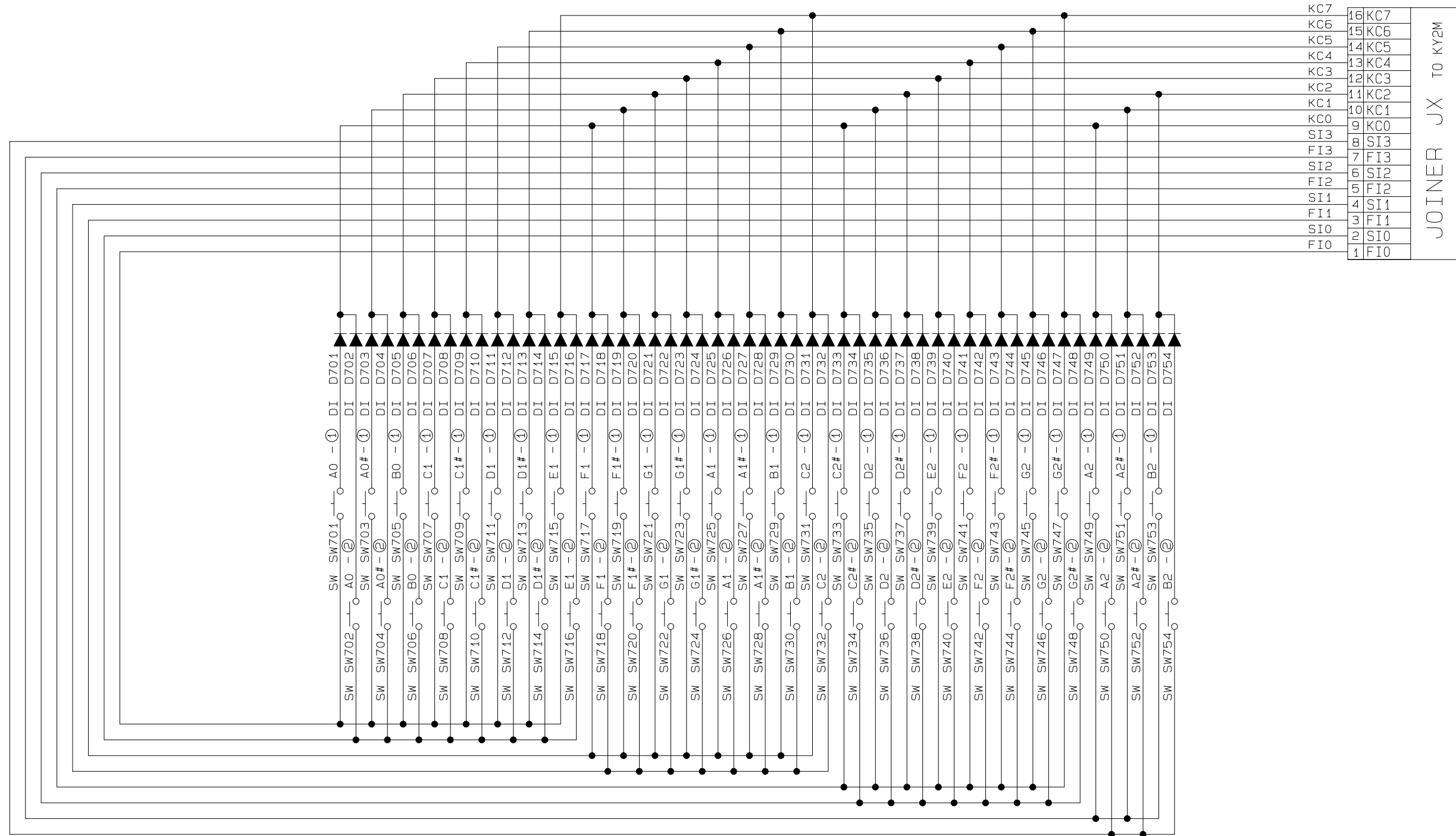
NOTE
▷ DPA 1N5401-EP
▽ B 2A02B
▽ DI 1SS133T-77
◇ VOLTAGE CHECK POINT



Ass'y	FUSE	220-240V
F400	50T025H	
F401	50T010H	
F402	50T040H	
F403	50T040H	

JCM887T-KY1M

NOTE
 DI ◀ : 1S2076TE



KEYBOARD PCB JCM887T-KT2M

NOTE

DI ◀ : 1S2076TE

JCM887T-KY2M

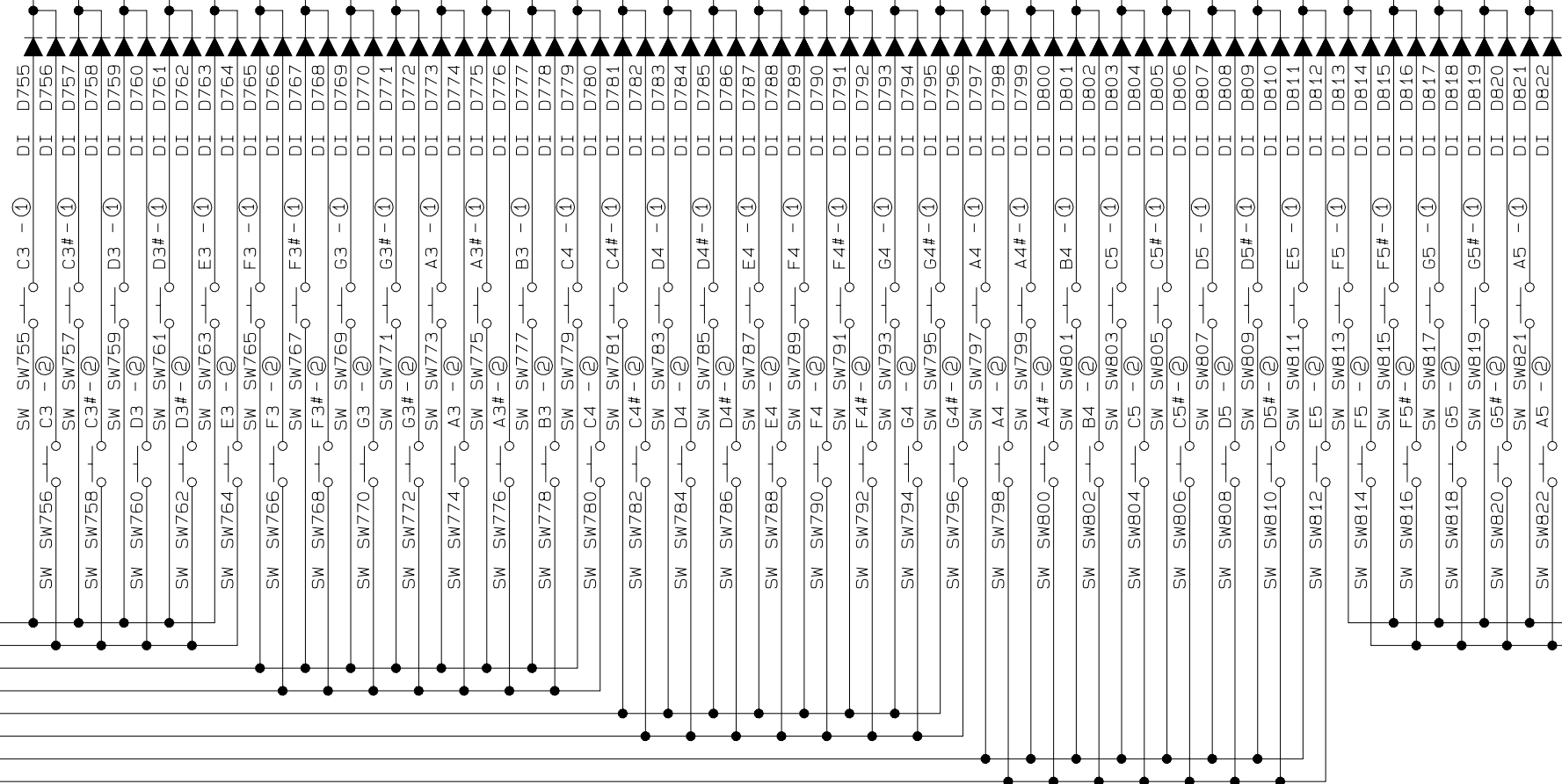
CONNECTOR CA701 TO MA1M

30	FI10
29	SI10
28	FI11
27	SI11
26	FI12
25	SI12
24	FI13
23	SI13
22	FI14
21	SI14
20	KI0
19	KC1
18	KC2
17	KC3
16	KC4
15	KC5
14	KC6
13	KC7
12	SI5
11	FI5
10	SI6
9	FI6
8	SI7
7	FI7
6	SI8
5	FI8
4	SI9
3	FI9
2	SI10
1	FI10

1	FI10
2	SI10
3	FI11
4	SI11
5	FI12
6	SI12
7	FI13
8	SI13
9	KC0
10	KC1
11	KC2
12	KC3
13	KC4
14	KC5
15	KC6
16	KC7

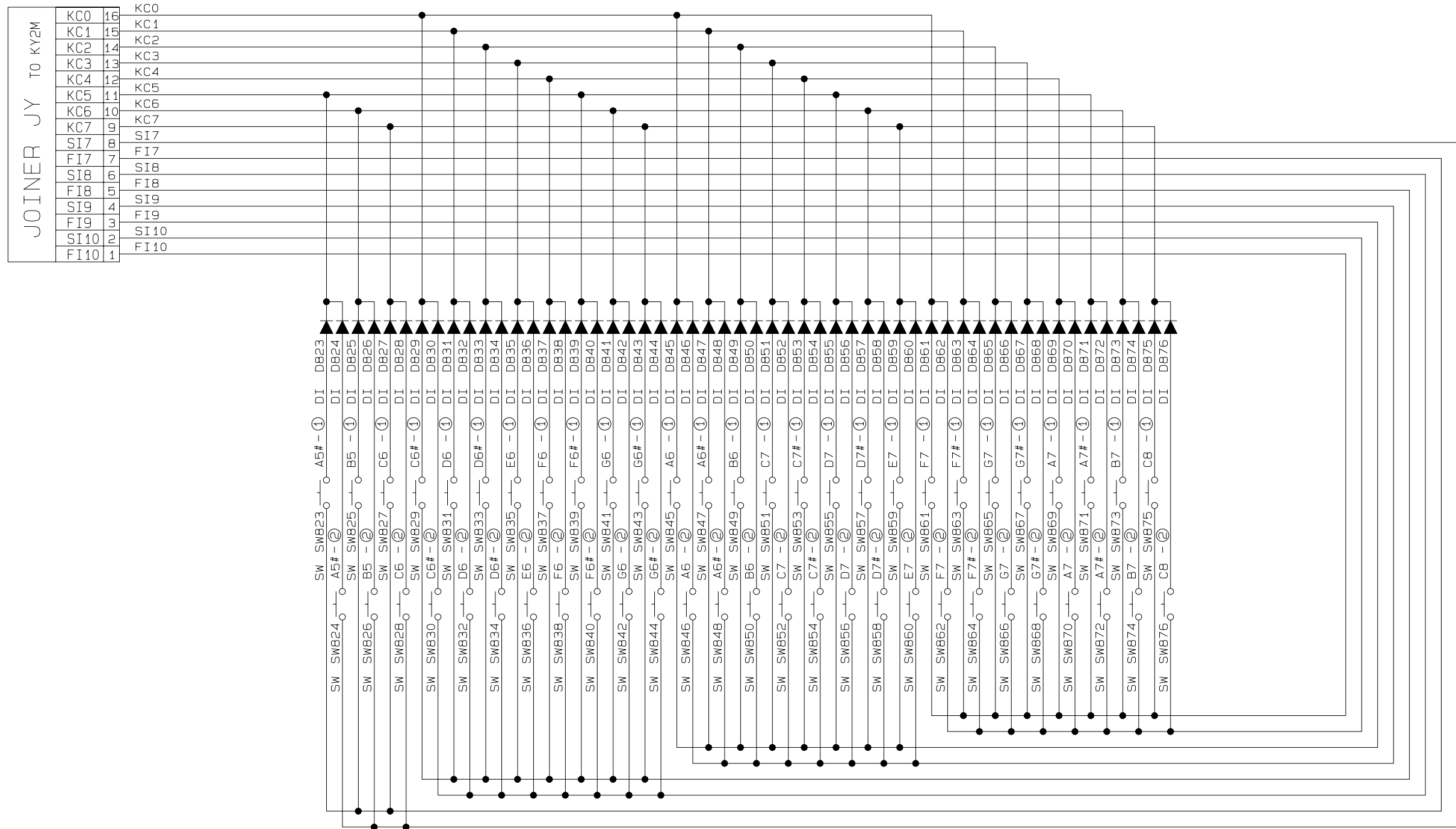
1	FI10
2	SI10
3	FI9
4	SI9
5	FI8
6	SI8
7	FI7
8	SI7
9	KC7
10	KC6
11	KC5
12	KC4
13	KC3
14	KC2
15	KC1
16	KC0

JOINER JY TO KY3M



JCM887T-KY3M

NOTE
 DI ◯ : 1S2076TE



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