

# **OPERATION MANUAL**

**MODEL NO: TKG2-UP** 



Nintendo

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	C A U T I O N S		

- P.C.Board should not be exposed direct to the sun. Direct sunshine is very harmful to LSI(memory element).
- 2. P.C.Board to be stored or transported should be wrapped by a conductive pouch or aluminum foil, because LSI and IC used in the machine are semiconductor integrated circuits of which basic element is MOS-FET.
- 3. When images on the Video Monitor screen are disturbed by powerful noise or other electrical causes, turn the main power off once and then on again.

#### 2. SPECIFICATIONS

Power Consumption : 118W

Size :  $600(W) \times 850(D) \times 1700(H)$ mm.

Weight : 100 Kgs.

Number of Player : 1 or 2 person(s)

Number of Jumpman : 3 ~ 6 (Adjustable)

Accessories : Operation Manual : 1 copy

Key for Back Door : 2 pcs.

Key for Coin Box Door : 2 pcs.

Fuse : 4 pcs.

 $100\sim120V$  :  $5A \times 1$ ,  $4A \times 2$ ,  $0.3A \times 1$ 

220~240V : 4A  $\times$  2, 3A  $\times$  1, 0.3A  $\times$  1

NOTE: Specifications are subject to change for improvement without notice.

#### 3. INSTALLATION OF THE MACHINE

#### 3-1 Cautions on installation

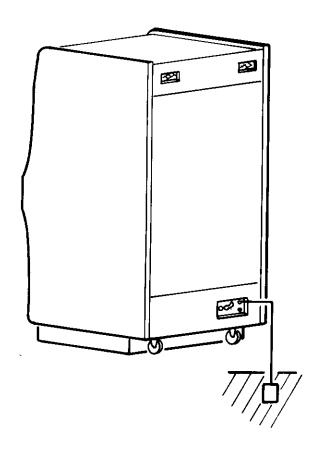
- (1) The power cord of the machine should not be connected to a wall outlet together with large load unit(s) such as motor, cooler, etc.
- (2) Turn the power off before setting and removing the P.C. Board and connectors. Carefully handle them.
- (3) Do not touch IC, LSI and other electronic parts on P.C. Board.
  Do not use a tester or the like on them. (They may be damaged by the inner voltage of the instruments.)
- (4) When exchanging a fuse, use a new one of the prescribed capacity.
- (5) The machine should be installed where it is not hot, keeping away from a heating appliance and direct sunshine.
- (6) The machine should be installed where it is not wet and dusty.
- (7) Do not touch the inside of the video monitor which has high tension units. Inform service station, if necessary.

#### 3-2 Earthing of machine

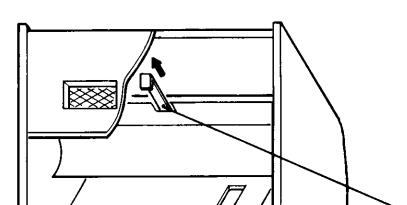
- (1) When the machine is installed in a wet place, it should be grounded to avoid accident by an electric shock.
  - a) Connect an earthing wire to the earthing terminal of the machine.
  - b) The opposite end of the earthing wire should be connected to an earthing bar which is firmly inserted into the ground.

#### (2) Cautions

- a) Do not connect the earthing wire to a water pipe, because polyvinyl-choloride pipes are sometimes used in the water lines and, if so, the electronic continuity is cut at the points.
- b) Do not connect the earthing wire to the gas pipe absolutely. That is very dangerous.



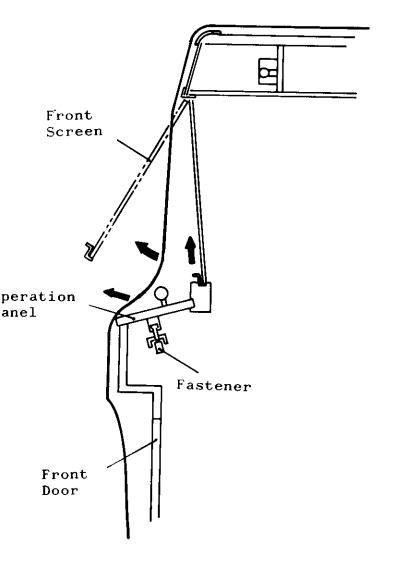
#### 4. MAINTENANCE AND INSPECTION



4-1 Dismounting of front screen

Opening the back door, pull the front screen clamp which is mounted under the top plate. Pull the front screen upward while pushing and then pull toward you.

Front Screen Clamp



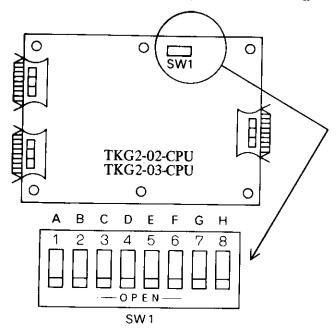
4-2 Dismounting of operation panel

To dismount the operation panel for maintenance or inspection of the Control Unit or Micro Switch, open the front door and unfasten the fastener.

#### 5. POINTS AND METHODS OF ADJUSTMENT

#### 5-1 CPU P.C.Board

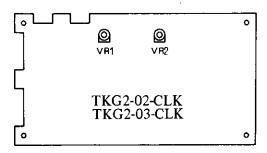
The number of Jumpman, score level, the number of coin and type of machine can be set with the switches on CPU P.C.Board according to the diagram below.



	A	В	C	D	E	F	G	Н
Number of Jumpman 3 4 5	OFF ON OFF ON	OFF OFF ON ON						
Score Level for extra Jumpman								
7,000 points 10,000 points 15,000 points 20,000 points		'	OFF ON OFF ON	OFF OFF ON ON				
Coinage					<del>                                     </del>		<del> </del>	
l coin /l play l coin /2 plays l coin /3 plays l coin /4 plays coins/l play coins/l play coins/l play coins/l play coins/l play					OFF OFF OFF ON ON ON	OFF ON OFF ON OFF ON	OFF ON ON OFF OFF ON	
T <b>able/Upri</b> gh <b>t</b> Table Upright								OFF ON

NOTE: Keep the switch H always at the ON position.

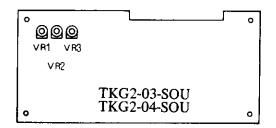
Semi-fixed resistors, VR1 and VR2 on CLK P.C. Board are used to adjust video monitor screen.



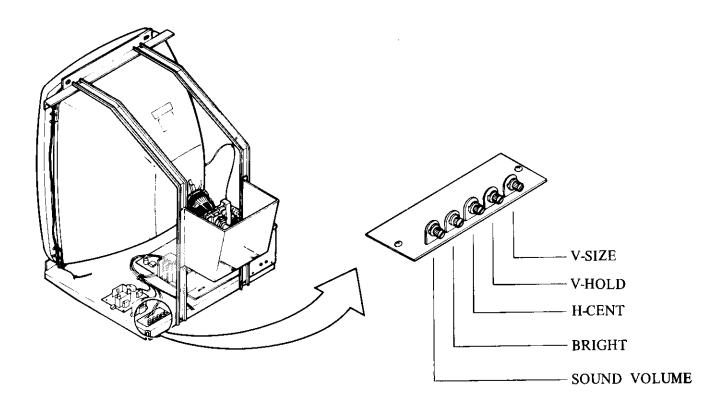
VRI	50KΩ 0.3W top type white knob	$\bigcirc$	Turn right to move image downward.
VR2	50KΩ 0.3W top type white knob	$\bigcap$	Turn right to move image leftward

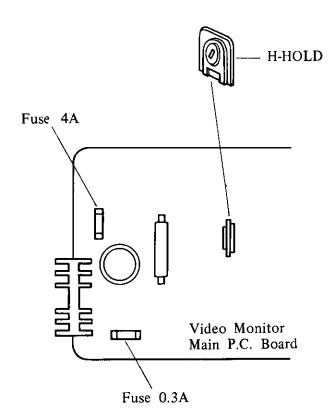
#### 5-3 SOU P.C. Board

Semi-fixed resistor VR1 on SOU P.C. Board is used to adjust sound balance.

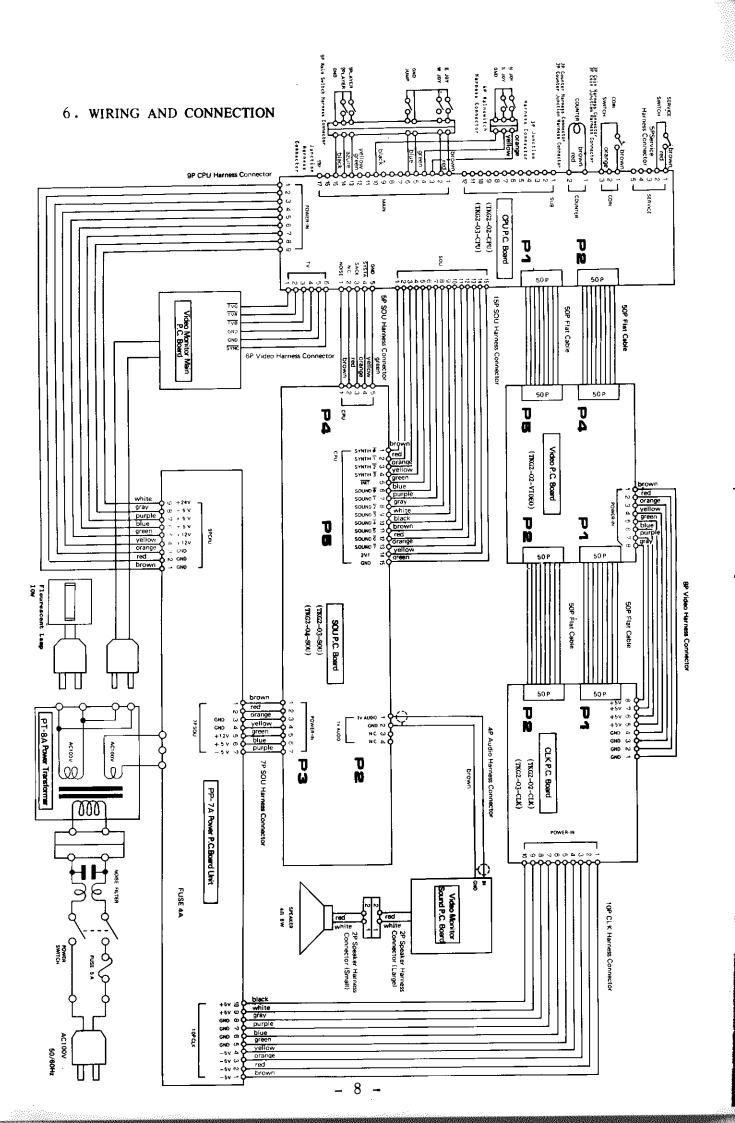


VR1	10KΩ 1/5W plain type white knob	Balance of effective sound
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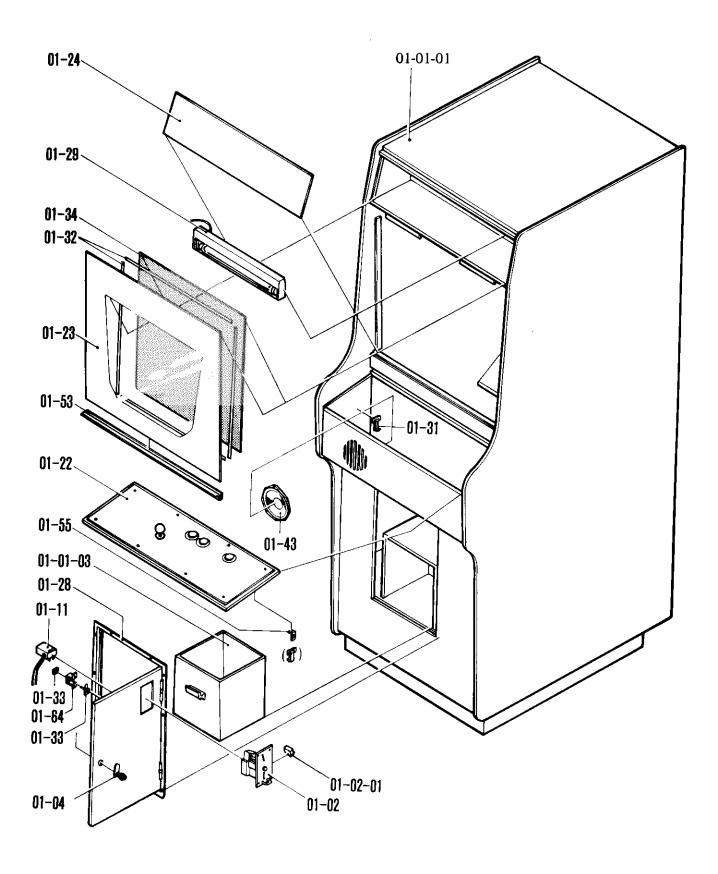


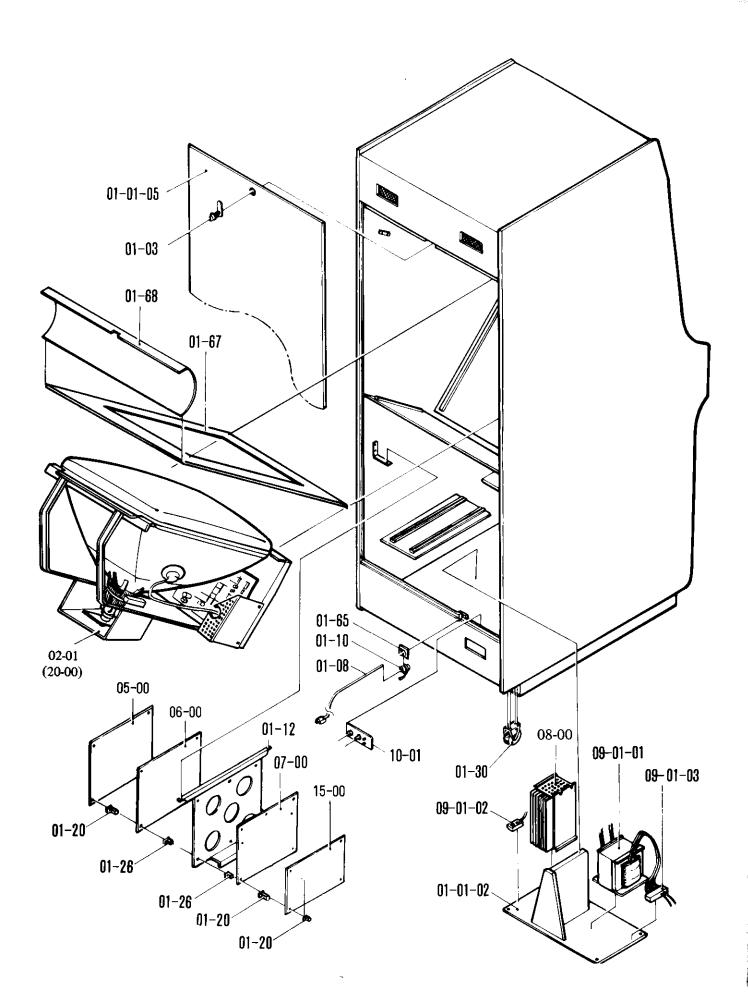
NOTE: Do not touch the inside of the Video Monitor in which many parts are supplied with high tension.

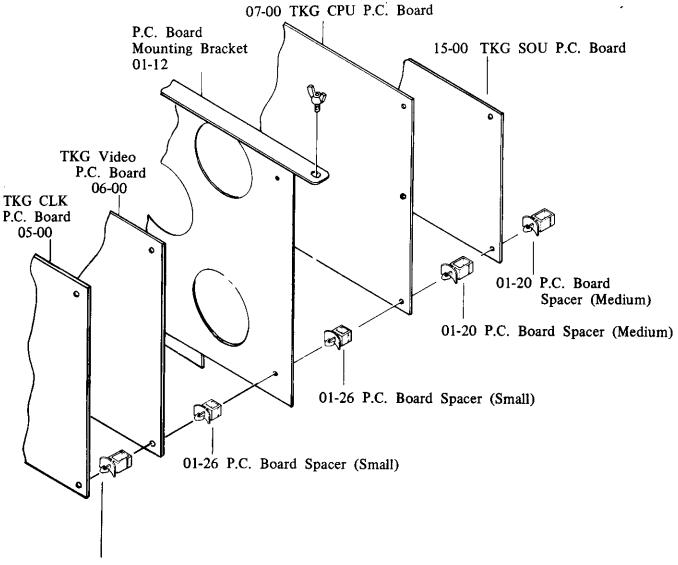


## 7. NAME OF EACH PART

### (1) Body



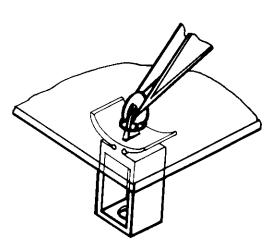


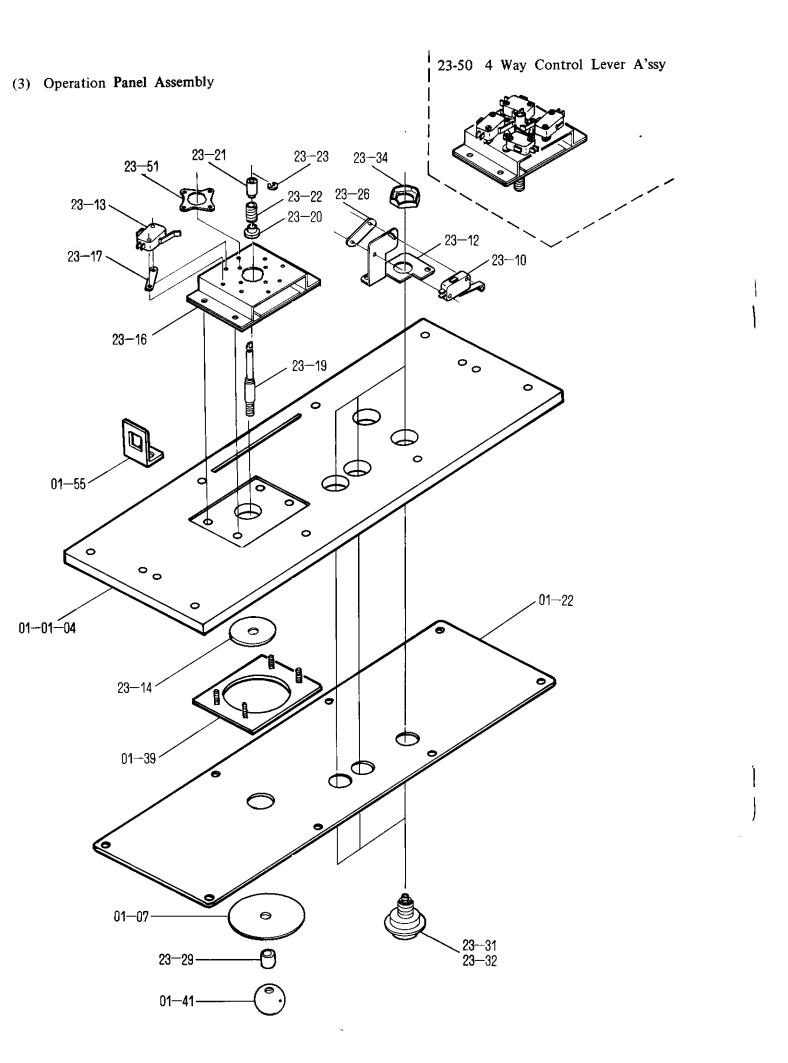


01-20 P.C. Board Spacer (Medium)

Removing P.C. Board Spacer

Press the claw with a pincette, as illustrated, and pull out the P.C. Board.





## 8. PARTS LIST

## 1. Body

		014	D. 1	FOB Japan
No.	Name of Parts	Q'ty	Remarks	per pc.
TKGU-01-01-01	Body	1		
TKGU-01-01-02	Transformer Base	1		
TKGU-01-01-03	Cash Box	1		
TKGU-01-01-04	Control Lever A'ssy Base	1		
TKGU-01-01-05	Back Door	1		
TKGU-01-02	Coin Selector	1	T	
TKGU-01-02-01	Coin Switch	1	T	
TKGU-01-03	Back Door Lock	1		
TKGU-01-04	Front Door Lock	1		
TKGU-01-08	Power Cord	1		
TKGU-01-10	Strain Relief Bushing	1	T	
TKGU-01-11	Game Counter	1	Т	
TKGU-01-12	P.C. Board Mounting Bracket	1	T	
TKGU-01-20	P.C. Board Spacer (Medium)	16	Т	
TKGU-01-22	Operation Panel	1		
TKGU-01-23	Front Screen	1		1
TKGU-01-24	Name Plate	1		
TKGU-01-26	P.C. Board Spacer (Small)	10	Т	
TKGU-01-28	Front Door Ass'y	1		
TKGU-01-29	Fluorescent Lamp A'ssy	1		
TKGU-01-30	Caster	2		
TKGU-01-31	Operation Panel A'ssy Fastener (A)	2		
TKGU-01-32	Adhesive Tape		1.9m	
TKGU-01-33	Service Switch	1	Ť	
TKGU-01-34	Screen Filter	1		
TKGU-01-39	Control Lever A'ssy Mounting Plate	1		
TKGU-01-41	Control Lever Knob	1		
TKGU-01-43	Speaker	1		
TKGU-01-53	Front Screen Frame (Lower)	1		
TKGU-01-55	Operation Panel A'ssy Fastener (B)	2		
TKGU-01-64	Service Switch Bracket	1		
TKGU-01-65	Strain Relief Bushing Plate	1		1
TKGU-01-67	Blind Cardboard (Large)	1		
TKGU-01-68	Blind Cardboard (Small)	1		
TKGU-01-70	Control Knob Plate	1		

No.	Name of Parts	Q'ty	Remarks	FOB Japan per pc.
TKGU-05-00	CLK P.C. Board	1	T (TKG2-03-CLK) (TKG2-02-CLK)	
TKGU-06-00	Video P.C. Board	1 1	T (TKG2-02-VIDEO)	
TKGU-07-00	CPU P.C. Board	1	T (TKG2-02-CPU) (TKG2-03-CPU)	
TKGU-15-00	SOU P.C. Board	1	T (TKG2-03-SOU) (TKG2-04-SOU)	
TKGU-08-00	(PP-7A) Power P.C. Board	1	T	
TKGU-09-01-01	(PT-8A) Power Transformer	1 1		
TKGU-09-01-02	2P Table Tap	1		
TKGU-09-01-03	Terminal Block	1		
TKGU-10-01	Power Switch A'ssy	1		
TKGU-13-01	10P CLK Harness Connector	1	T	
TKGU-13-02	2P Counter Harness Connector	1		
TKGU-13-03	9P CPU Harness Connector	1	T	
TKGU-13-04	3P Coin Harness Connector	1 1		
TKGU-13-05	5P Service Harness Connector	1 1		
TKGU-13-06	2P Speaker TV Harness Connector	1		
TKGU-13-07	4P-750 Audio Harness Connector	1		
TKGU-13-10	9P Main Switch Harness Connector	1		
TKGU-13-11	17P Junction Harness Connector	1		
TKGU-13-12	50P Flat Cable	4	T	
TKGU-13-13	8P Video Harness Connector	1	T	
TKGU-13-14	7P SOU Harness Connector	1	T	
TKGU-13-17	2P Speaker Harness Connector	1		
TKGU-13-24	15P SOU Harness Connector	1	<b>T</b> .	
TKGU-13-25	5P SOU Harness Connector	1	T	
TKGU-13-28	3P Junction Harness Connector	1		
TKGU-13-29	4P Main Switch Harness Connector	1		
TKGU-13-31	6P-1000 Video Harness Connector	1		
TKGU-13-32	2P Counter Junction Harness Connector	1		
TKGU-13-33	3P Coin Junction Harness Connector	1		
TKGU-20-00	Video Monitor	1	(20–5F)	
TKGU-23-10	Micro Switch	1		
TKGU-23-12	Switch Button Bracket	4		
TKGU-23-13	Control Switch	1	T	
TKGU-23-14	Blind Plate	1	Т	
TKGU-23-16	Bearing Bracket	1	Τ	

No.	Name of Parts	Q'ty	Remarks	FOB Japar per pc.
TKGU-23-17	Switch Spacer	4	T	
TKGU-23-19	Shaft	1	T	
TKGU-23-20	Spring Stopper	1	T	
TKGU-23-21	Switch Collar	1	T	
TKGU-23-22	Lever Spring	1	T	
TKGU-23-23	E Ring 4	1	T	
TKGU-23-26	Nut Plate	4		
TKGU-23-29	Control Knob Collar	1	T	
TKGU-23-31	Switch Button A'ssy (Blue)	3		
TKGU-23-32	Switch Button A'ssy (Orange)	1		
TKGU-23-34	Pal Nut	4		
TKGU-23-50	4 Way Control Lever A'ssy	1	T	
TKGU-23-51	4 Way Guide Plate	1	T	

T: Parts which is also used with the Table Model.

#### 2. CLK P.C. Board

No.         Name of Parts         Q'ty         Remarks         I           TKG-05-00B         CLK P.C. Board         1         Complete Set            TKG-05-01         IC 10101         1         Quadruple OR/NOR Gates            TKG-05-02         IC 10104         4         Quadruple 2-Input AND Gates            TKG-05-03         IC 10105         8         Triple 2-3-2-Input OR/NOR Gates            TKG-05-04         IC 10107         6         Triple 2-Input Exclusive-OR/NOR Gates            TKG-05-05         IC 10109         1         Dual 4-5-Input OR/NOR Gates            TKG-05-06         IC 10116         1         Triple Line Receivers            TKG-05-08         IC 10124         6         Quadruple TTL-to-ECL Translators           TKG-05-09         IC 10125         6         Quadruple ECL-to-TTL Translators           TKG-05-10         IC 10131         2         Dual Type-D Master-Slave Flip Flops           TKG-05-11         IC 10133         4         Quadruple Latches           TKG-05-12         IC 10136         2         Dual J-K Master-Slave Flip-Flop           TKG-05-14         IC 10174         6         Dual 4-to-1 Multiplexers <th>per pc.</th>	per pc.
TKG-05-01         IC 10101         1         Quadruple OR/NOR Gates           TKG-05-02         IC 10104         4         Quadruple 2-Input AND Gates           TKG-05-03         IC 10105         8         Triple 2-3-2-Input OR/NOR Gates           TKG-05-04         IC 10107         6         Triple 2-Input Exclusive-OR/NOR Gates           TKG-05-05         IC 10109         1         Dual 4-5-Input OR/NOR Gates           TKG-05-06         IC 10116         1         Triple Line Receivers           TKG-05-08         IC 10124         6         Quadruple TTL-to-ECL Translators           TKG-05-09         IC 10125         6         Quadruple ECL-to-TTL Translators           TKG-05-10         IC 10131         2         Dual Type-D Master-Slave Flip Flops           TKG-05-11         IC 10133         4         Quadruple Latches           TKG-05-12         IC 10135         2         Dual J-K Master-Slave Flip-Flop           TKG-05-13         IC 10136 with radiator fin(L)         7         Universal Hexadecimal Counter	١.
TKG-05-02 IC 10104 4 Quadruple 2-Input AND Gates TKG-05-03 IC 10105 8 Triple 2-3-2-Input OR/NOR Gates TKG-05-04 IC 10107 6 Triple 2-Input Exclusive-OR/NOR Gates TKG-05-05 IC 10109 1 Dual 4-5-Input OR/NOR Gates TKG-05-06 IC 10116 1 Triple Line Receivers TKG-05-08 IC 10124 6 Quadruple TTL-to-ECL Translators TKG-05-09 IC 10125 6 Quadruple ECL-to-TTL Translators TKG-05-10 IC 10131 2 Dual Type-D Master-Slave Flip Flops TKG-05-11 IC 10133 4 Quadruple Latches TKG-05-12 IC 10135 2 Dual J-K Master-Slave Flip-Flop TKG-05-13 IC 10136 with radiator fin(L) 7 Universal Hexadecimal Counter	
TKG-05-03IC 101058Triple 2-3-2-Input OR/NOR GatesTKG-05-04IC 101076Triple 2-Input Exclusive-OR/NOR GatesTKG-05-05IC 101091Dual 4-5-Input OR/NOR GatesTKG-05-06IC 101161Triple Line ReceiversTKG-05-08IC 101246Quadruple TTL-to-ECL TranslatorsTKG-05-09IC 101256Quadruple ECL-to-TTL TranslatorsTKG-05-10IC 101312Dual Type-D Master-Slave Flip FlopsTKG-05-11IC 101334Quadruple LatchesTKG-05-12IC 101352Dual J-K Master-Slave Flip-FlopTKG-05-13IC 10136 with radiator fin(L)7Universal Hexadecimal Counter	
TKG-05-04 IC 10107 6 Triple 2-Input Exclusive-OR/NOR Gates TKG-05-05 IC 10109 1 Dual 4-5-Input OR/NOR Gates TKG-05-06 IC 10116 1 Triple Line Receivers  TKG-05-08 IC 10124 6 Quadruple TTL-to-ECL Translators TKG-05-09 IC 10125 6 Quadruple ECL-to-TTL Translators TKG-05-10 IC 10131 2 Dual Type-D Master-Slave Flip Flops TKG-05-11 IC 10133 4 Quadruple Latches TKG-05-12 IC 10135 2 Dual J-K Master-Slave Flip-Flop TKG-05-13 IC 10136 with radiator fin(L) 7 Universal Hexadecimal Counter	
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TKG-05-11 IC 10133 4 Quadruple Latches TKG-05-12 IC 10135 2 Dual J-K Master-Slave Flip-Flop TKG-05-13 IC 10136 with radiator fin(L) 7 Universal Hexadecimal Counter	
TKG-05-12 IC 10135 2 Dual J-K Master-Slave Flip-Flop TKG-05-13 IC 10136 with radiator fin(L) 7 Universal Hexadecimal Counter	
TKG-05-13 IC 10136 with radiator fin(L) 7 Universal Hexadecimal Counter	
TVC 05 14 IC 10174 6 Dual 4-to-1 Multiplexers	
1KG-05-14   IC 10174   0   Date 1 to 1 Manual Process	
TKG-05-15 IC SN74LS02 1 Quadruple 2-Input Positive NOR Gate	
TKG-05-16 IC SN74LS04 1 Hex Inverter	
TKG-05-17 IC SN74LS10 1 Tri 3-Input NAND Gate	
TKG-05-18 IC SN74LS74 2 Dual D-Type Edge-Triggered Flip-Flop W/Set and Reset	
TKG-05-19 IC SN74LS86 2 Quadruple 2-Input Exclusive OR Gate	
TKG-05-20 IC SN74LS161/163 2 Synchronous Presettable 4-Bit Counter with Clear	
TKG-05-21 IC SN74LS164 6 8 Bit Serial-In Parallel-Out Shift Register	
TKG-05-22B IC MB7072 E/N 4 256X4 Bit ECL RAM with radiator fin(S)	
TKG-05-23 Electrolytic Capacitor 2 100µF 16V	
TKG-05-24 Ceramic Capacitor 86 0.01 µF 50V	
TKG-05-26B Ceramic Capacitor 2 220pF 50V	
TKG-05-27 Ceramic Capacitor 2 10pF 50V	
TKG-05-28 Ceramic Capacitor 2 33pF 50V	
TKG-05-29 B Resistor 1 330Ω ¼W ± 5%	
TKG-05-30 B Resistor 49 510Ω ¼W ± 5%	
TKG-05-32 B Resistor 6 1KΩ ¼W ± 5%	
TKG-05-33 B Resistor 2 2.2KΩ ¼W ± 5%	

No.	Name of Parts	Q'ty	Remarks	FOB Japan per pc.
<b>TKG</b> -05-34 B	Resistor	1	10KΩ ¼W ± 5%	
TKG-05-35 B	Resistor	2	15KΩ ¼W ± 5%	
<b>TKG-</b> 05-36 B	Resistor	1	20KΩ ¼W ± 5%	
TKG-05-37B	Resistor	1	51KΩ ¼W ± 5%	
TKG-05-38	Transistor	2	2SC1215-R/S/T	
TKG-05-39	Choke Cc 1	1	ST-501339	
TKG-05-40	Toroidal Transformer	1	ST-501340	
TKG-05-41	Crystal Oscillator	1	ST-501338	
TKG-05-42	Resistor Array	14	EXB-P88-511J	
TKG-05-43	IC SN74 LS123	2	Dual Retriggerable Single shot	
TKG-05-44	Polyester Film Capacitor	1 1	ECQMIH 0.001μF 102KZ	
TKG-05-45	Polyester Film Capacitor	1	ECQMIH 0.022µF 223KZ	
TKG-05-46	Polyester Film Capacitor	1 1	ECQMIH 0.1µF 104KZ	
TKG-05-47	Resistor (Carbon)	1 1	200Ω ¼W ± 5%	
TKG-05-48	Resistor (Carbon)	2	4.7KΩ ¼W ± 5%	
TKG-05-49	Resistor (Carbon)	2	22KΩ ¼W ± 5%	
TKG-05-50	Variable Resistor	2	EVL-V0A00-B54 50KΩ 1/3W	

### 3. Video P.C. Board

No.	Name of Parts	Q'ty	Remarks	, per	Japan pc.
TKG-06-00B	Video P.C. Board	1	Complete Set		
TKG-06-01	IC SN74LS04	1	Hex Inverter		
TKG-06-02	IC SN74LS08	1	Quadruple 2-Input Positive AND Gate		
TKG-06-03	IC SN74LS20	2	Dual 4-Input Positive NAND Gate		
TKG-06-04	IC SN74LS74	1	Dual D-Type Edge-Triggered Flip-Flop W/Set and Reset		
TKG-06-05	IC SN74LS86	2	Quadruple 2-Input Executive OR Gate		
TKG-06-06	IC SN74LS139	1	Dual 2-to 4-line Decoder/Demultiplexer		
TKG-06-07	IC SN74LS157	9	Quadruple 2-line to 1-line Data Selector/ Multiplexer		
TKG-06-08	IC SN74LS174	1	Hex D-Type Flip-Flop W/Reset		
TKG-06-09	IC SN74LS194	4	4-Bit Shift Register		
TKG-06-10	IC SN74LS245	2	Octal 3 State Bus Transceivers		
TKG-06-11	IC SN74LS273	2	Octal D-FFS		
TKG-06-12	IC SN74LS283	4	4 Bit Binary Full Adder		
TKG-06-13	IC SN74LS367	2	Hex Bus Driver W/3 State Output		
TKG-06-14	IC SN74LS373	1	Octal 3-State D-latches		
TKG-06-15	IC SN74S02	1	Quad 2 Input NOR Gate		
TKG-06-16	IC SN74S86	1	Quad 2 Input EX-OR Gate		
TKG-06-17	IC SN74S157	1	2 to 1 Data Selectors		
TKG-06-18	IC SN74S194	8	4-Bit Shift Register		
TKG-06-20	IC 2114	2	1024X 4-Bit Static MOS RAM		
TKG-06-21	IC 2148-6	2	1024X 4-Bit Static MOS RAM	i	
TKG-06-22	IC 2716 (390ns)	4	2048X 8 Bit EP ROM		
TKG-06-23	IC 2716 (450ns)	2	2048X 8 Bit EP ROM		
TKG-06-24B	IC MB 7052	1	256X4 Bit Bipolar P-ROM		
TKG-06-25	Resistor	7	1KΩ ¼W ± 5%		
TKG-06-26	Electrolytic Capacitor	1	100μF 16V		
TKG-06-27	Ceramic Capacitor	33	0.1μF 50V		
TKG-06-28	IC SN74LS10	1	Tri 3 Input NAND Gate		
TKG-06-29	IC SN74LS85	2	4-Bit Magnitude Comparator		
TKG-06-30	IC SN74LS175	1	Quadruple D-FFs		
TKG-06-31	IC SN74LS293	1	Binary Counter		
TKG-06-32	IC SN74LS393	1	Dual 4-Bit Binary Counters Gate		
TKG-06-33	IC SN74S 32	1	Quadruple 2 Input OR		
TKG-06-34	IC SN74S 175	2	Quadruple D-FFs		

## 4. CPU P.C. Board

No.	Name of Parts	Q'ty	Remarks	FOB Japan per pc.
TKG-07-00	B CPU P.C. Board	1	Complete Set	
TKG-07-01	IC 2114	6	1024X4 Bit Static MOS RAM	
TKG-07-04	IC SN74LS00	1	Quadruple 2-Input Positive NAND Gate	
TKG-07-05	IC SN74LS02	3	Quadruple 2-Input Positive NOR Gate	
TKG-07-06	IC SN74LS04	7	Hex Inverter	
TKG-07-07	IC SN74LS08	2	Quadruple 2-Input Positive AND Gate	
TKG-07-08	IC SN74LS32	1	Quadruple 2-Input Positive OR Gate	
TKG-07-09	IC SN74LS74	2	Dual D-Type Edge-Triggered Flip-Flop W/Set and Reset	
TKG-07-10	IC SN74LS123	1	Dual Retriggerable Single Shot	
TKG-07-11	IC SN74LS125	1	Quadruple 3 State Bus Buffers	•
TKG-07-12	IC SN74LS132	1	Quadruple 2 Input NAND Schmit Triggers	
TKG-07-13	IC SN74LS138	6	3-to 8-Line Decoder/Demultiplexer	
TKG-07-14	IC SN74LS139	1	Dual 2-to 4-Line Decoder/Demultiplexer	
TKG-07-15	IC SN74LS174	2	Hex D-Type Flip-Flop W/Reset RAM	
<b>TKG-0</b> 7-16	IC SN74LS175	2	Quadruple D-Type Flip-Flop W/Reset	
TKG-07-17	IC SN74LS240	4	Octal Buffer/Line Driver/Line Receiver W/3-State Output	
TKG-07-18	IC SN74LS245	1	Octal 3-State Bus Transceivers	
TKG-07-19	IC SN74LS259	2	8-Bit Addressable Latches	<del></del>
TKG-07-20	IC SN74LS367	5	Hex Bus Driver W/3 State Output	
TKG-07-21	IC MB7052	2	Bipolar ROM 256X 4-Bit	
TKG-07-22	IC Z 80A	1	8-Bit Microprocessor	
TKG-07-23	IC I 8257-5	1	DMA Controller	į
TKG-07-24	IC 2532	4	4096X 8-Bit EP ROM	i
TKG-07-25	Electrolytic Capacitor	1	1μF 50V	
TKG-07-26	Electrolytic Capacitor	1	47μF 16V	
TKG-07-27	Electrolytic Capacitor	3	100μF 16V	
TKG-07-28	Ceramic Capacitor	3	0.01µF 50V	
TKG-07-29	Ceramic Capacitor	41	0.1μF 50V	
<b>TKG</b> -07-30	Tantalum Capacitor	15	10μF 16V	
TKG-07-31B	Resistor Array	6	68Ω ¼W ± 5%	
TKG-07-32B	Resistor Array	3	1KΩ ¼W ± 5%	
TKG-07-33B	Resistor Array	1	4.7KΩ ¼W ± 5%	

No.	Name of Parts	Q'ty	Remarks	FOB Japan per pc.
TKG-07-35 B	Resistor	2	680Ω ¼W ± 5%	
TKG-07-36B	Resistor	1	360Ω ¼W ± 5%	
TKG-07-37B	Resistor	1	18KΩ ¼W ± 5%	
TKG-07-38B	Resistor	1	30KΩ ¼W ± 5%	
TKG-07-39	Resistor	6	68Ω ¼W ± 5%	
TKG-07-40	Resistor	3	100Ω ¼W ± 5%	
TKG-07-41	Resistor	1	200Ω ¼W ± 5%	
TKG-07-42	Resistor	4	220Ω ¼W ± 5%	
TKG-07-43	Resistor	7	330Ω ¼W ± 5%	
TKG-07-44B	Resistor	8	470Ω ¼W ± 5%	
TKG-07-45	Resistor	8	1KΩ ¼W ± 5%	
TKG-07-46B	Resistor	1	2.2KΩ ¼W ± 5%	
TKG-07-47	Resistor	1	2KΩ ¼W ± 5%	
TKG-07-48	Resistor	8	4.7KΩ ¼W ± 5%	
TKG-07-49	Resistor	1	7.5KΩ ¼W ± 5%	
TKG-07-50	Resistor	4	10KΩ ¼W ± 5%	
<b>TKG-</b> 07-51B	Resistor	1	68KΩ ¼W ± 5%	
TKG-07-52	Resistor	2	33KΩ ¼W ± 5%	
TKG-07-53B	Resistor	1	75KΩ ¼W ± 5%	
TKG-07-54	Transistor	1	2SO1384-R	
TKG-07-55	Transistor	2	2SA564-Q/R	
TKG-07-56	Transistor	5	2SC828-P/Q/R	
TKG-07-57	Diode	1	IS1885	
<b>TKG-</b> 07-58B	Diode	5	IS1953	
<b>TKG-</b> 07-59B	Dip Switch	1	DCC-8P	
TKG-07-60	Resistor (Carbon)	1	75KΩ ¼W ± 5%	
TKG-07-61	Resistor (Carbon)	1	91KΩ ¼W ± 5%	
TKG-07-62	Resistor (Carbon)	1	390KΩ ¼W ± 5%	
TKG-07-63	Resistor (Carbon)	2	560KΩ ¼W ± 5%	
TKG-07-64	IC SN74LS86	2	Quadruple 2-Input EX-OR Gate	
TKG-07-65	IC SN74LS164	1	8-Bit Shift Register	
TKG-07-66	IC SN74LS373	2	Octal 3-State D-Latches	
TKG-07-67	IC CD4049 UB	1	Hex Buffer/Converter	
TKG-07-68	IC CD4066B	3	Quadruple Bilateral Switch	
TKG-07-69	Electrolytic Capacitor	1	22μF 16 <b>V</b>	
TKG-07-70	Electrolytic Capacitor	1	33μF 16 <b>V</b>	
<b>TK</b> G-07-71	Electrolytic Capacitor	2	3.3µF 16V No Polarity-Type	
TKG-07-72	Electrolytic Capacitor	1	0.47μF 50V No Polarity-Type	

## 5. Power P.C. Board Unit

No.	Name of Parts	Q'ty	Remarks	FOB Japan per pc.
TKG-08-00	Power P.C. Board	1	Complete Set	
TKG-08-01	Transistor	4	2SC2535 OR 2SC2335	
TKG-08-02	Transistor	4	2 <b>SA</b> 817	
TKG-08-03	Transistor	1	2SA1015	
TKG-08-04	Fast Recovery Center Tap Diode	1	5GG2C41	
TKG-08-05	Shot Key Diode	2	15FWJ2C1 OR 30FWJ2C1	
TKG-08-06	Silicon Rectifier Diode	1	1B4B41	
TKG-08-07	Silicon Rectifier Diode	1	S4VB40 4A 400VW	
TKG-08-08	Hybrid IC	2	3D-1000	
TKG-08-09	3 Terminals Regulators	1	78M24 0.5A 24VW	
TKG-08-10	3 Terminals Regulators	1	7812 1A 12VW	
TKG-08-11	Thyristors	1	5P4M	
TKG-08-12	Thyristors	1	03P05M	
TKG-08-13	Diode	4	IS1835	
TKG-08-14	Diode	9	IS954	
TKG-08-15	Diode	1	IS1588	
TKG-08-16	Photo Coupler	1	PS2002	
TKG-08-17	Zener Diode	4	1Z27 OR RD27FB	
TKG-08-18	Zener Diode	2	05Z5.6V (05Z5.6L, RD5.6EB)	
TKG-08-19	Zener Diode	1	05Z13V (05Z15L)	
TKG-08-20	Zener Diode	1	05Z27V (RD27EC OR RD30EB)	
TKG-08-21	Ceramic Capacitor	3	DE0707B471K2K 470pF 2KV	
TKG-08-22	Ceramic Capacitor	2	DE0707B221K2K 220pF 2KV	
TKG-08-23	Film Capacitor	7	MDD2J473M 0.047μF 630VW	
TKG-08-24	Aluminium Electrolytic Capacitor	2	330μF 200VW 105°C	
TKG-08-25	Aluminium Electrolytic Capacitor	8	2200μF 10V	
TKG-08-26	Aluminium Electrolytic Capacitor	1	<b>470</b> μF 50V	
TKG-08-27	Aluminium Electrolytic Capacitor	1	470μF 25V	
TKG-08-28	Aluminium Electrolytic Capacitor	1	$10\mu\text{F}$ 16V	j
TKG-08-29	Aluminium Electrolytic Capacitor	13	47μF 16V	
TKG-08-30	Aluminium Electrolytic Capacitor	1	47μF 35V	
TKG-08-31	Aluminium Electrolytic Capacitor	5	10μF 50V	

				FOB Japan
No.	Name of Parts	Q'ty	Remarks	, per pc.
TKG-08-32	Film Capacitor	1	0.01μF 50V	
TKG-08-33	Film Capacitor	2	1000pF 50V	
TKG-08-34	Resistor (Coil Winding)	1	$22\Omega \qquad 5W \pm 10\%$	
TKG-08-35	Resistor (Carbon)	3	$100\Omega \qquad \frac{1}{2}W \pm 5\%$	
TKG-08-36	Resistor (Carbon)	5	$1K\Omega$ $\frac{1}{4}W \pm 5\%$	
TKG-08-37	Resistor (Carbon)	10	51Ω ¼W± 5%	
TKG-08-38	Resistor (Metal Oxide)	2	$1K\Omega$ $2W \pm 10\%$	
TKG-08-39	Resistor (Carbon)	6	12Ω ½W± 5%	
TKG-08-40	Resistor (Carbon)	1	$2.4K\Omega \qquad \frac{1}{4}W \pm 5\%$	
TKG-08-41	Resistor (Cement)	1	$22\Omega \qquad 5W \pm 10\%$	
TKG-08-42	Resistor (Cement)	1	220Ω 5W ± 10%	
TKG-08-43	Variable Resistor	2	100KΩ GF06P	
TKG-08-44	Variable Resistor	2	2KΩ GF06P	
TKG-08-45	Shunt Resistor	2	5MΩ ±20%	
TKG-08-46	SC Coil	1	SC-02	
TKG-08-47	SF Coil	2	100μH 8A	
TKG-08-48	SF Coil	1	800μH 2A	
TKG-08-49	Auxiliary Power Transformer	1	EI-28 Type 3D-1000	
TKG-08-50	Oscillator Transformer	4	EE-16 Type 3D-1000	
TKG-08-51	Oscillator Transformer	1	EI-40 Type 3D-0077	
TKG-08-52	Oscillator Transformer	1	EC-35 Type 3D-0077	
TKG-08-53	Fuse Element	1	NR Type 4A	

## 6. SOU P.C. Board

No.	Name of Parts	Q'ty	Remarks	FOB Japan per pc.
TKG-15-00B	SOU P.C. Board	1	Complete Set	
(TKG-15-00C)				
TKG-15-01	IC SN74LS04	1	Hex Inverter	
TKG-15-02	IC SN74LS05	1	Hex Inverter with Open Collector	
TKG-15-03	IC SN74LS164	3	8 Bit Serial-In Parallel-Out Shift Register	,
TKG-15-04	IC MB3614	1	Low Power Quadruple Operational Amplifiers	
TKG-15-05	IC LM556	1	Dual Timer	
TKG-15-07	IC SN74LS86	1	Quadruple 2-Input Exclusive OR Gate	
TKG-15-08	IC SN74LS75	2	Quadruple Bistable Latch	
TKG-15-09	IC SN74LS161	1	Synchronous Presettable 4-Bit Binary Counter W/Direct Reset	
TKG-15-10	IC SN74LS367	1	Hex Bus Driver W/3 State Output	
TKG-15-12	IC CD4049UB	2	Hex Buffer/Converter (Inverting)	
TKG-15-13	IC DAC08CQ	1	8-Bit Digital-to-Analog Converter	
TKG-15-15	IC 2716	2	EP-ROM	<del>!</del> -
TKG-15-16	IC MB8884	1	8-Bit Microprocessor	
TKG-15-18	Crystal Oscillator	1	HC-18U-182 6.00MHz	
TKG-15-26	Transistor	9	<b>2S</b> C1815	
TKG-15-27	Diode	10	ISS53	
TKG-15-29 B	Ceramic Capacitor	2	22pF 50V	
TKG-15-30	Ceramic Capacitor	2	0.01μF 25V	
TKG-15-31	Ceramic Capacitor	1	0.001μF 25V	
TKG-15-32	Ceramic Capacitor	15	0.068μF 25V	1
TKG-15-33	Ceramic Capacitor	1	0.022μF 25V	
TKG-15-34	Electrolytic Capacitor	2	220μF 16V	
TKG-15-35	Electrolytic Capacitor	7	1μF 50V	
TKG-15-36	Electrolytic Capacitor	1	3.3μF 16V	
TKG-15-37	Electrolytic Capacitor	1	4.7μF 16V	
TKG-15-38	Electrolytic Capacitor	3	10μF 16V	
TKG-15-39	Electrolytic Capacitor	1	22μF 16V	
TKG-15-40	Electrolytic Capacitor	3	3.3μF 50V	
TKG-15-41	Electrolytic Capacitor	1	$4.7\mu$ F 50V	
TKG-15-42	Electrolytic Capacitor	2	33μF 16V	
TKG-15-43	Polyester Film Capacitor	1	0.033μF 50V	,
TKG-15-44	Polyester Film Capacitor	2	0.047μF 50V	

,		0'4	Remarks	FOB Japan per pc.
No.	Name of Parts	Q'ty	Remarks	, po. po.
TKG-15-47	24 Pin IC Socket	1		
TKG-15-48	Resistor (Carbon)	1	$120\Omega \qquad ^{1}4W \pm 5\%$	
TKG-15-49	Resistor (Carbon)	2	$150\Omega \qquad \frac{1}{4}W \pm 5\%$	
TKG-15-50	Resistor (Carbon)	1	$750\Omega   \frac{1}{4}W \pm 5\%$	
TKG-15-51	Resistor (Carbon)	12	$1K\Omega \qquad ^{1}\!\!/W \pm 5\%$	
TKG-15-52	Resistor (Carbon)	2	1.2KΩ ¼W ± 5%	
TKG-15-53	Resistor (Carbon)	1	$3.9$ K $\Omega$ $^{1}$ W $\pm$ 5%	
TKG-15-55	Resistor (Carbon)	3	$4.7K\Omega \qquad ^{1}\!\!/W \pm 5\%$	
TKG-15-56	Resistor (Carbon)	2	$5.1 \text{K}\Omega$ $\frac{1}{4}\text{W} \pm 5\%$	
TKG-15-57	Resistor (Carbon)	5	$5.6$ K $\Omega$ $^{1}$ 4W ± 5%	
TKG-15-59	Resistor (Carbon)	16	$10K\Omega$ $\frac{1}{4}W \pm 5\%$	
TKG-15-60	Resistor (Carbon)	1	$12K\Omega$ $\frac{1}{4}W \pm 5\%$	
TKG-15-62	Resistor (Carbon)	1	$18K\Omega$ $\frac{1}{4}W \pm 5\%$	
TKG-15-63	Resistor (Carbon)	l	$20K\Omega \qquad ^{1}\!\!/W \pm 5\%$	
TKG-15-64	Resistor (Carbon)	2	$27K\Omega \qquad ^{1}4W \pm 5\%$	
TKG-15-65	Resistor (Carbon)	2	43KΩ ¼W ± 5%	
TKG-15-66	Resistor (Carbon)	8	47KΩ ¼W ± 5%	
TKG-15-67	Resistor (Carbon)	3	100KΩ ¼W ± 5%	
TKG-15-69	Resistor (Carbon)	2	$2.0$ K $\Omega$ $\frac{1}{4}$ W ± 5%	
TKG-15-70	Resistor (Carbon)	3	$3.3M\Omega$ $4W \pm 5\%$	
TKG-15-71	IC SN74LS00	1	Quadruple 2 Input NAND Gate	
TKG-15-72	Transistor	1	2SC2320 Rank F	
TKG-15-73	Polyester Film Capacitor	1	0.068µF 50V ± 20%	
TKG-15-74	Semi Fixed Resistor	1	10ΚΩ 1/5W	
TKG-15-75	Tantalum Capacitor	1	22μF 16V	