### HOW TO DISTINGUISH BETWEEN TU-12A/HA and TU-12(P)/H(P)

The difference between TU-12A/12HA and TU-12(P)/12H(P) is as follows.

- The description of the country origin on the rear side of CASE is different.

<table>
<thead>
<tr>
<th>MODEL NAME</th>
<th>COUNTRY ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>TU-12A</td>
<td>MADE IN JAPAN</td>
</tr>
<tr>
<td>TU-12HA</td>
<td>MADE IN JAPAN</td>
</tr>
<tr>
<td>TU-12(P)</td>
<td>MADE IN PHILIPPINE</td>
</tr>
<tr>
<td>TU-12H(P)</td>
<td>MADE IN PHILIPPINE</td>
</tr>
</tbody>
</table>
## TU-12(P)

### SPECIFICATION

- **Tuning Range:** C1 (32.70 Hz) to B5 (987.77 Hz)
- **Accuracy:** +/- 1 CENT
- **Master Oscillator:** Quartz (3.579545 MHz)
- **Standard Pitch:** 400 to 445 Hz 1 Hz step
- **Jacks:** Input/Output AC Adaptor
- **Dimensions:** 145 (W) X 35 (H) X 53 (D) mm
  - 5-7/16 (W) X 1-3/8 (H) X 2-1/16 (D) inches
- **Weight:** 170 g / 6 oz

### ACCESSORY:
- Soft Case (#2201074000)
- Dry Battery / 9V type (******)
- Owner's Manual
  - ENGLISH (#2602080200)
  - JAPANESE (#2602080100)

*Specifications are subject to change without notice.

### PARTS LIST

**SAFETY PRECAUTIONS:**

The parts marked **Δ** have safety-related characteristics. Use only listed parts for replacement.

Due to one or more of the following reasons, parts with parts code ****** cannot be supplied as service parts.

- Part supplied only as a component in a complete assembly
- Copyright does not permit the part to be supplied
- Part is sold commercially

**NOTE:** The parts marked # are new. (Initial parts)

The description ‘QTY’ means a necessary number of the parts per one product.

We can not supply except the following parts. If you need them, please order the finished goods.

### CASING

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2201084400</td>
<td>Battery Cover</td>
<td>202-544</td>
</tr>
</tbody>
</table>

### JACK, EXT TERMINAL

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>13449711</td>
<td>AC ADAPTOR JACK</td>
<td>HEC007-01-630</td>
</tr>
<tr>
<td>13449145</td>
<td>6.3MM JACK</td>
<td>YKB21-5012 (W/SW)</td>
</tr>
<tr>
<td>13449146</td>
<td>6.3MM JACK</td>
<td>(INPUT)</td>
</tr>
</tbody>
</table>

### DISPLAY UNIT

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2243040300</td>
<td>METER</td>
<td>CAM21-R300A</td>
</tr>
</tbody>
</table>

### FINISHED GOODS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2201081510</td>
<td>FINISHGOODS(PRINTED)</td>
<td>1</td>
</tr>
<tr>
<td>2201081510</td>
<td>FINISHGOODS(PRINTED)</td>
<td>FOR SERVICE ONLY</td>
</tr>
</tbody>
</table>

### WIRING

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2802015102</td>
<td>BATTERY CONNECTOR</td>
<td>001D</td>
</tr>
</tbody>
</table>

### ACCESSORIES (Standard)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2201074000</td>
<td>SOFT CASE(BLK)</td>
<td>201-740</td>
</tr>
<tr>
<td>2602082020</td>
<td>OWNER'S MANUAL</td>
<td>ENGLISH</td>
</tr>
<tr>
<td>******</td>
<td>DRY BATTERY</td>
<td>100P</td>
</tr>
</tbody>
</table>
**TU-12H(P)**

**SPECIFICATION**

- **TUNING RANGE:** C1(32.70 Hz) to B6 (1975.53 Hz)
- **ACCURACY:** +/-1 CENT
- **MASTER OSCILLATOR:** Quartz(3.579545 MHz)
- **STANDARD PITCH:** 440 to 445 Hz 1Hz step
- **JACKS:** Input/Output AC Adaptor
- **DIMENSIONS:** 145 (W) X 35 (H) X 53 (D) mm
  5-7/16 (W)X1-3/8X2-1/16 inches
- **WEIGHT:** 170 g / 6 oz
- **ACCESSORY:** Soft Case(#2201073800)
- **OPTION:** AC Adaptor (FSA-Serius)
  Owner’s Manual
  JAPANESE(#2602081100)
  For SHAKUHACHI(#26020814)
  For KOTO/SYAMISEN(#26020813)

**PARTS LIST**

We can not supply  except the following parts. If you need them ,please order the finished goods.

<table>
<thead>
<tr>
<th>CASING</th>
<th>2201080000</th>
<th>BATTERY COVER</th>
<th>202-580</th>
</tr>
</thead>
<tbody>
<tr>
<td>JACK,EXT TERMINAL</td>
<td>13449711</td>
<td>AC ADAPTOR JACK</td>
<td>HEC0070-01-630</td>
</tr>
<tr>
<td></td>
<td>13449145</td>
<td>6.5MM JACK</td>
<td>YKR1-5010</td>
</tr>
<tr>
<td></td>
<td>13449146</td>
<td>6.5MM JACK</td>
<td>YKR1-5012 (W/5W)</td>
</tr>
<tr>
<td>DISPLAY UNIT</td>
<td>2243040000</td>
<td>METER</td>
<td>GM261-R300A</td>
</tr>
<tr>
<td>FINISHED GOODS</td>
<td>SK030104</td>
<td>FINISHED GOODS</td>
<td>FOR SERVICE ONLY</td>
</tr>
<tr>
<td>WIRING</td>
<td>F3419102</td>
<td>BATTERY CONNECTOR</td>
<td>(0001)</td>
</tr>
<tr>
<td>ACCESSORIES (Standard)</td>
<td>2201074000</td>
<td>SOFT CASE(BR)</td>
<td>201-738</td>
</tr>
<tr>
<td></td>
<td>2602081200</td>
<td>OWNER’S MANUAL</td>
<td>TU-12H ENGLISH</td>
</tr>
<tr>
<td></td>
<td>********</td>
<td>DRY BATTERY</td>
<td>00P</td>
</tr>
</tbody>
</table>

**SAFETY PRECAUTIONS:**

The parts marked # have safety-related characteristics. Use only listed parts for replacement.

Due to one or more of the following reasons, parts with parts code ******** cannot be supplied as service parts.

- Part supplied only as a component in a complete assembly
- Copyright does not permit the part to be supplied
- Part is sold commercially

**NOTE:** The parts marked # are new. (initial parts) The description "Q'TY" means a necessary number of the parts per one product.
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METER ADJUSTMENT
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CIRCUIT DIAGRAM(new type)
SPECIFICATIONS(old type)
PARTS LIST(old type)
CIRCUIT BOARD(old type)
CIRCUIT DIAGRAM(old type)

TU-12A/12HA (新バージョン) と
TU-12/12H (旧バージョン) の見分け方

To distinguish between TU-12A/12HA(new) and TU-12/12H(old), see the INPUT or OUTPUT jack (Fig.A) and check the serial number (Table 1).

Table 1

Serial No. | TU-12A/12HA (NEW) | TU-12/12H (OLD)
--- | --- | ---
QEG7100-up (TU-12A) | Prior to QEG7100 (TU-12) | DFOS250-up (TU-12A) | Prior to DFOS250 (TU-12H)
7843751000 (TU-12A) | 78300350 (TU-12A) | 7843851000 (TU-12A) | 783075110 (TU-12H)

METER ADJUSTMENT

1. While holding down PITCH, switch the unit ON. The unit enters test mode.
2. Adjust CR1 so that the pointer stays in the 0 cent (center of the meter face).
3. Switch the unit OFF to exit the test mode.

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乾電池を差し入れてください。
PARTS LIST/パーツリスト (TU-12A/TU-12HA)

<table>
<thead>
<tr>
<th>PARTS LIST/パーツリスト (TU-12A/TU-12HA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOP CASE</td>
</tr>
<tr>
<td>TU-12A</td>
</tr>
<tr>
<td>Gray</td>
</tr>
<tr>
<td>PANEL</td>
</tr>
<tr>
<td>TU-12A</td>
</tr>
<tr>
<td>Switch Knob</td>
</tr>
<tr>
<td>Gray</td>
</tr>
<tr>
<td>JACK</td>
</tr>
<tr>
<td>TU-12A</td>
</tr>
<tr>
<td>Adapter Jack</td>
</tr>
<tr>
<td>INPUT</td>
</tr>
<tr>
<td>POTENTIOMETER</td>
</tr>
<tr>
<td>TU-12A</td>
</tr>
<tr>
<td>Trimmer Pot</td>
</tr>
</tbody>
</table>

NOTE: MAIN BOARD does not include Meter

NOTE: Replacement MAIN Board includes SW Board

Difference Between TU-12HA PCB and TU-12A PCB

TU-12A PCB and TU-12HA PCBの違い

<table>
<thead>
<tr>
<th>Jumper 1</th>
<th>Jumper 2</th>
<th>Jumper 3</th>
<th>Resistor 35 (100Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>○</td>
<td>Nothing</td>
<td>○</td>
<td>Nothing</td>
</tr>
<tr>
<td>○</td>
<td>Nothing</td>
<td>○</td>
<td>Nothing</td>
</tr>
<tr>
<td>○</td>
<td>Nothing</td>
<td>○</td>
<td>Nothing</td>
</tr>
</tbody>
</table>

CIRCUIT DIAGRAM/回路図

TU-12A PCB and TU-12HA PCBの違い
BOSS TU-12H SERVICE NOTES
First Edition

SPECIFICATIONS

Power Consumption: 9V DC @ 20mA
Tuning Range: C4 (32.704Hz) to B5 (1975.53Hz)
Accuracy: ±1 cent
Master Oscillator: Quartz (3.579545MHz)

TU-12H

Switch EVO-Q51-07K (13129271)
Button (2247053300)

LED array GL-107RS (15029142)
LED SLP-144-40 (15029144)

ELECTRET CONDENSER MIC
WM-034 BX (12389302)

COVER (battery) (2202088000)
Case (top) (22201064200)
Case (bottom) (22201064300)

PARTS LIST

2201064200 Case (top) TU-12H
2201064300 Case (bottom) TU-12H
2200689000 Cover (battery) TU-12H
2201061900 Case (top) TU-12H
2201062000 Case (bottom) TU-12H
2202064400 Cover (battery) TU-12H
2247023700 Knob (power)
2247033000 Button (PITCH, DOWN, UP)
2341041400 Batterynap 1097P24

JACK
13449125 HLS0520-01-110 (INPUT)
13449126 HLS0520-01-010 (OUTPUT)
13449711 HEC0470-01-630 (AC adapter)

SWITCH
13150023 HSW0520-01-010 (slide power)
13129271 EVO-Q51-07K light touch
(PITCH, DOWN, UP)

PCB
79006530 MAIN BOARD
79006540 SWITCH BOARD
79007510 MAIN BOARD
79007520 SWITCH BOARD

TRIMMER
13289151 H0651A009 2.2kΩ

ELECTRET CONDENSER MIC
12389302 WM-034BX

CRYSTAL
13898712 3.579545MHz

METER
2243043000 GM261-R3090A (w/o cushion)
2226033000 Cushion (TU-12 meter)

IC
15179140 MBR1012-520 CPU
15219126 LC700 Generator/Divider
15189151 L1A469A or 4558S
15229809 BA634

DIODE
1601020900 S5050G
15019303 R05.5JBR (zener) TU-12
15019304 R06.2JBR (zener) TU-12
15019305 R06.2JBR (zener) SN up to 294000
15019306 R06.2JBR (zener) SN 304100 and up
15019307 R06.2JBR (zener) SN 304100 and up
15019308 R07.5JBR (zener) TU-12H
15019309 R05.1JBR (zener) TU-12H
15019310 R05.1JBR (zener) LED
15029142 GL-107RS (red, 7-array LED)
15029144 SLP-144-40 (red)
15029143 SLP-138R (red, TUNING GUIDE)

Printed in Japan BE-2

TU-12

Switch EVO-Q51-07K (13129271)
Button (2247053300)

LED array GL-107RS (15029142)
LED SLP-144-40 (15029144)

ELECTRET CONDENSER MIC
WM-034 BX (12389302)

COVER (battery) (2202064400)
Case (top) (22201064200)
Case (bottom) (22201064300)

RESISTOR
1378911400 CRB25DY 7.68k 0.5% (metal film)
1376928100 CRB25FX 125k 1% (metal film)
1372949000 ELR 35G 250k 2% (vertical mount)
1371949100 ELR 25J 500k 5% (vertical mount)

TRANSISTOR
15129108 2SC945P or (15129114 2SC1815-GR)
15139116 2SK118-0 (FET)

OTHERS
2258020200 Shield Plate

TU-12 Second Edition

SPECIFICATIONS

Power Consumption: 9V DC @ 20mA
Tuning Range: C4 (32.704Hz) to B5 (1975.53Hz)
Accuracy: ±1 cent
Master Oscillator: Quartz (3.579545MHz)

TU-12

Meter GM261-R3090A
(2243043000)

LED SLP-138R
(15029142)

COVER (battery) (2202064400)
Case (top) (22201064200)
Case (bottom) (22201064300)

RESISTOR
1378911400 CRB25DY 7.68k 0.5% (metal film)
1376928100 CRB25FX 125k 1% (metal film)
1372949000 ELR 35G 250k 2% (vertical mount)
1371949100 ELR 25J 500k 5% (vertical mount)

TRANSISTOR
15129108 2SC945P or (15129114 2SC1815-GR)
15139116 2SK118-0 (FET)

OTHERS
2258020200 Shield Plate

CHANGES ON TU-12 MAIN BOARD
D8, C13 and Q4 are added in later versions for improvement, 
Upward compatible change, later versions can be a substitute for predecessor(s).