

# FLANGER FLG-1

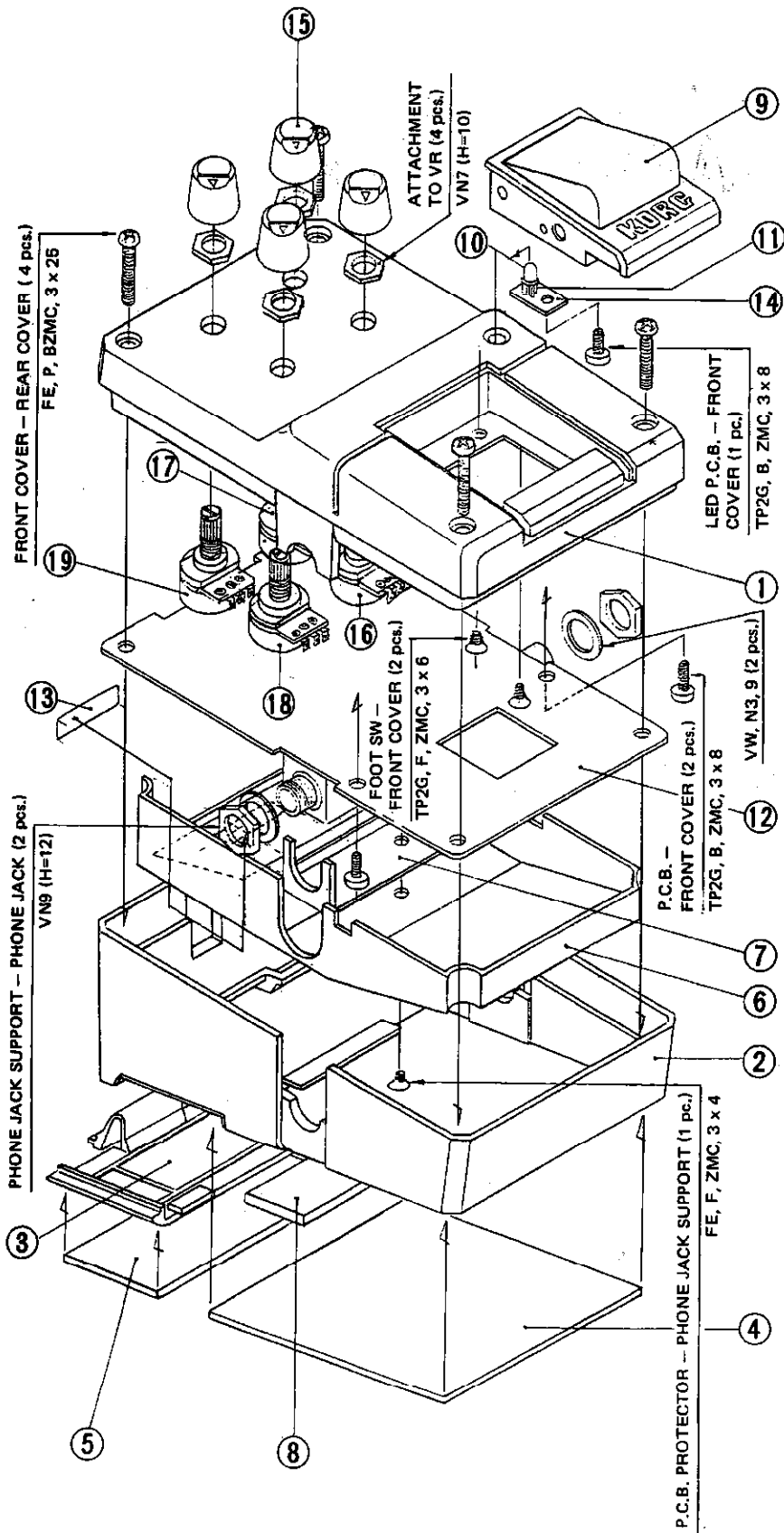
## CONTENTS

|                               |    |
|-------------------------------|----|
| 1. SPECIFICATIONS .....       | 27 |
| 2. STRUCTURAL DIAGRAM .....   | 28 |
| 3. CIRCUIT DIAGRAM .....      | 29 |
| 4. BLOCK DIAGRAM .....        | 30 |
| 5. PC BOARD .....             | 30 |
| 6. ADJUSTMENT PROCEDURE ..... | 31 |
| 7. PARTS LIST .....           | 32 |

## 1. SPECIFICATIONS

- Input impedance 1M $\Omega$
  - Output impedance 1k $\Omega$
  - Maximum input level +3dBm (INTENSITY 0, MANUAL 0, FEEDBACK 0, at 250Hz)
  - Maximum output level +3dBm (INTENSITY 0, MANUAL 0, FEEDBACK 0, at 250Hz)
  - Delay time 12msec. ~ 1msec.
  - Modulation speed 0.1Hz ~ 10Hz
  - Feedback 0 ~ 100%
  - Frequency response +0/-1.5dB
  - [EFFECT OFF]
  - Residual noise level -90dBm (MANUAL 10, INTENSITY 0, FEEDBACK 0, input short-circuited, IHF-A)
  - Operating voltage 10 ~ 7.5V
  - Power consumption 12.8mA
  - Pedal switch life Over 10,000 times of switching
  - Functions SPEED, INTENSITY, MANUAL, FEEDBACK, EFFECT ON/OFF LED, FOOT SW, INPUT, OUTPUT
  - Power supply 006P 9V battery/DC jack
  - Dimensions 70(W) x 68(H) x 129(D) mm
  - Weight 470 g (including battery)
- (All values are typical.)

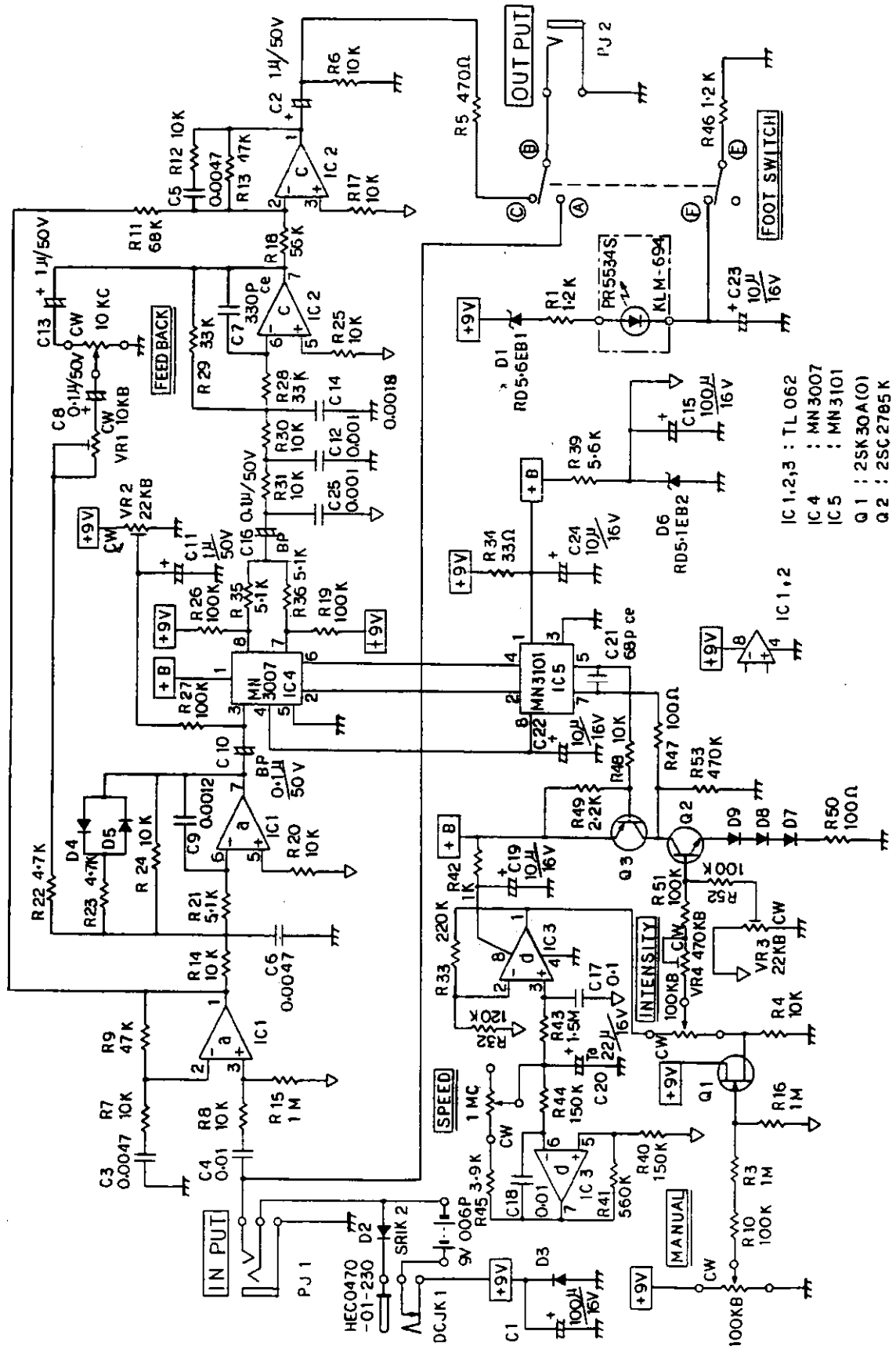
## 2. STRUCTURAL DIAGRAM



| PART NO. | PART NAME                | PART CODE |
|----------|--------------------------|-----------|
| 1        | FRONT COVER              | 64703400  |
| 2        | REAR COVER               | 64703100  |
| 3        | BATTERY COVER            | 64703200  |
| 4        | RUBBER STOPPER LARGE     | 50009300  |
| 5        | RUBBER STOPPER SMALL     | 50009400  |
| 6        | P.C.B. PROTECTOR         | 64607000  |
| 7        | PHONE JACK SUPPORT       | 64030500  |
| 8        | SPONGE                   | 50003400  |
| 9        | FOOT SW (KFS-2)          | 37507100  |
| 10       | LED (PR-5534S)           | 31200700  |
| 11       | LED HOLDER X-TYPE        | 57504000  |
| 12       | P.C. BOARD (KLM-683)     | 34068300  |
| 13       | SERIAL NUMBER SEAL       |           |
| 14       | LED P.C. BOARD (KLM-694) | 34069400  |
| 15       | EFFECTS KNOB SMALL       | 62014300  |
| 16       | VR 10KC                  | 36013100  |
| 17       | VR 1MC                   | 36012500  |
| 18       | VR 100KB                 | 36012100  |
| 19       | VR 100KB                 | 36012100  |

# 3. CIRCUIT DIAGRAM

KLM-683



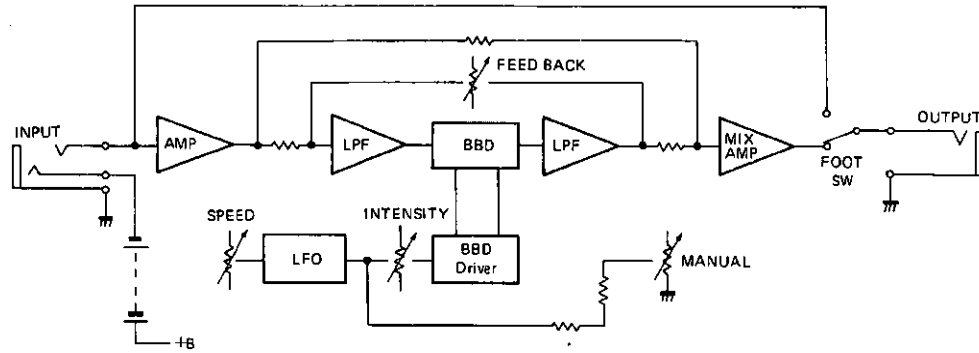
- IC 1,2,3 : TL 062
- IC 4 : MN 3007
- IC 5 : MN 3101
- Q 1 : 2SK 30A (O)
- Q 2 : 2SC 2785 K
- Q 3 : 2SA 1175 K or P

DIODES WITHOUT DESIGNATION: 1S1555

| CODE   |
|--------|
| 703400 |
| 703100 |
| 703200 |
| 006300 |
| 006400 |
| 007000 |
| 008000 |
| 008300 |
| 008400 |
| 008500 |
| 008600 |
| 008700 |
| 008800 |
| 008900 |
| 009000 |
| 009100 |
| 009200 |
| 009300 |
| 009400 |
| 009500 |
| 009600 |
| 009700 |
| 009800 |
| 009900 |

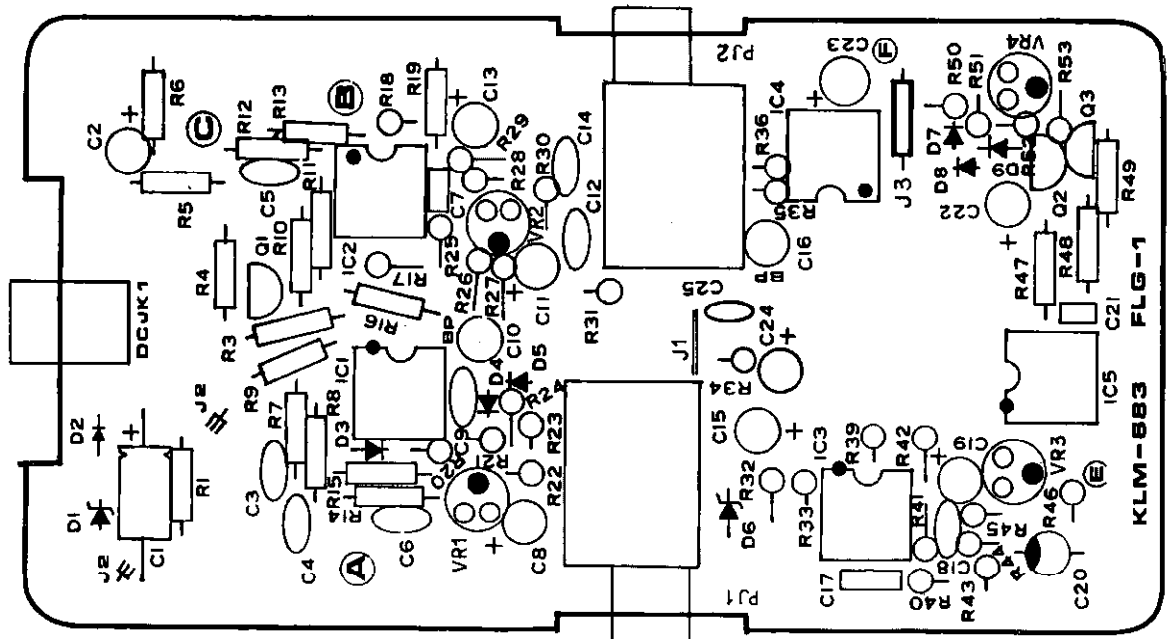
## 4. BLOCK DIAGRAM

KLM-683



## 5. P.C. BOARD

KLM-683



## 6. ADJUSTMENT PROCEDURE

### 1. BBD Clock check and adjustment

- 1) Insert a plug in the input jack and turn on the FLG-1 power supply. Set SPEED to 0, FEEDBACK to 0, MANUAL to 10.
- 2) Connect oscilloscope to KLM-683 J3 (0 ohm) and check the clock cycle. Refer to Figure 4.

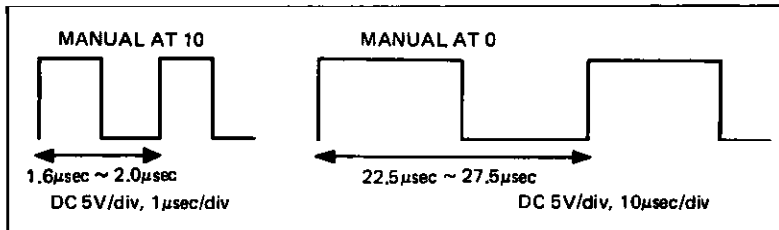


Fig-4

- 3) The cycle should be  $1.8 \mu\text{s} \pm 0.2 \mu\text{s}$ .
- 4) Adjust VR4 if necessary.
- 5) Set MANUAL to 0 and confirm a cycle of  $25 \mu\text{s} \pm 2.5 \mu\text{s}$ . Refer to figure 4.
- 6) Adjust VR3 if necessary.

### 2. BBD bias check and adjustment

- 1) Apply signal generator signal (250 Hz, sine wave 3 Vp-p) to FLG-1 input.
- 2) Connect oscilloscope (0.5 V/div, 1 ms/div, AC) to KLM-683 IC4 (MN3007) 8-pin and observe the waveform.
- 3) The waveform's upper and lower portions should be symmetrical and it should be of maximum amplitude.
- 4) Adjust VR2 if necessary.

### 3. Feedback check and adjustment

- 1) Apply signal generator signal (250 Hz, sine wave, 3 Vp-p) to FLG-1 input.
- 2) Connect oscilloscope to output and short input to ground.
- 3) Confirm that the waveform observable on the oscilloscope is oscillating.
- 4) Adjust VR1 if necessary.

**NOTE:** Oscillation occurs if the feedback knob is set to 7 or higher. Oscillation should not occur if set between 0 and 6.9.

## 7. PARTS LIST

| PARTS CODE                     | PARTS NAME SPECIFICATIONS | P.C. BOARD | IDENTIFICATION NO. FUNCTION | Q'TY |
|--------------------------------|---------------------------|------------|-----------------------------|------|
| <b>CARBON RESISTORS</b>        |                           |            |                             |      |
| 1009000                        | Y 0 Ω                     |            |                             | 1    |
| 10013310                       | S1/4JY 100 Ω              | KLM-683    |                             | 1    |
| 10013347                       | S1/4JY 470 Ω              |            |                             | 1    |
| 10013412                       | S1/4JY 1.2K               |            |                             | 1    |
| 10013422                       | S1/4JY 2.2K               |            |                             | 1    |
| 10013510                       | S1/4JY 10K                |            |                             | 7    |
| 10013547                       | S1/4JY 47K                |            |                             | 2    |
| 10013568                       | S1/4JY 68K                |            |                             | 1    |
| 10013610                       | S1/4JY 100K               |            |                             | 2    |
| 10013710                       | S1/4JY 1M                 |            |                             | 3    |
| 10113233                       | S1/4JT 33 Ω               |            |                             | 1    |
| 10113310                       | S1/4JT 100 Ω              |            |                             | 1    |
| 10113410                       | S1/4JT 1K                 |            |                             | 1    |
| 10113412                       | S1/4JT 1.2K               |            |                             | 1    |
| 10113439                       | S1/4JT 3.9K               |            |                             | 1    |
| 10113447                       | S1/4JT 4.7K               |            |                             | 2    |
| 10113451                       | S1/4JT 5.1K               |            |                             | 3    |
| 10113456                       | S1/4JT 5.6K               |            |                             | 1    |
| 10113510                       | S1/4JT 10K                |            |                             | 6    |
| 10113533                       | S1/4JT 33K                |            |                             | 2    |
| 10113556                       | S1/4JT 56K                |            |                             | 1    |
| 10113610                       | S1/4JT 100K               |            |                             | 4    |
| 10113612                       | S1/4JT 120K               |            |                             | 1    |
| 10113615                       | S1/4JT 150K               |            |                             | 2    |
| 10113622                       | S1/4JT 220K               |            |                             | 1    |
| 10113647                       | S1/4JT 470K               |            |                             | 1    |
| 10113656                       | S1/4JT 560K               |            |                             | 1    |
| 10113715                       | S1/4JT 1.5M               |            |                             | 1    |
| <b>MYLAR CAPACITORS</b>        |                           |            |                             |      |
| 20023410                       | 50V 0.001 μF              |            |                             | 2    |
| 20023412                       | 50V 0.0012 μF             | KLM-683    |                             | 1    |
| 20023418                       | 50V 0.0018 μF             |            |                             | 1    |
| 20023447                       | 50V 0.0047 μF             |            |                             | 3    |
| 20023510                       | 50V 0.01 μF               |            |                             | 2    |
| <b>CERAMIC CAPACITORS</b>      |                           |            |                             |      |
| 21012268                       | 50V 68PF                  |            |                             | 1    |
| 21012333                       | 50V 330PF                 | KLM-683    |                             | 1    |
| 21238610                       | 25V 0.1 μF                |            |                             | 1    |
| <b>TANTALUM CAPACITOR</b>      |                           |            |                             |      |
| 22007222                       | 16V 220FK                 | KLM-683    |                             | 1    |
| <b>ELECTROLYTIC CAPACITORS</b> |                           |            |                             |      |
| 23007310                       | A16V 100 μF               | KLM-683    |                             | 1    |
| 23107310                       | B16V 100 μF               |            |                             | 1    |
| 23207210                       | A16V 10 μF                |            |                             | 4    |
| 23215110                       | A50V 1 μF                 |            |                             | 3    |
| 23315010                       | A50V 0.1 μF               |            |                             | 1    |
| 24515010                       | 50V 0.1 μF                |            |                             | 2    |
| <b>TRANSISTORS</b>             |                           |            |                             |      |
| 30000727                       | 2SA733 AK                 | KLM-683    |                             | 1    |
| 30202211                       | 2SC2785 K                 |            |                             | 1    |
| <b>FET</b>                     |                           |            |                             |      |
| 30600115                       | 2SK 30A TM-0              | KLM-683    |                             | 1    |
| <b>DIODES</b>                  |                           |            |                             |      |
| 31000100                       | 1S1555                    | KLM-683    |                             | 6    |
| 31001500                       | SR1K-2                    |            |                             | 1    |
| <b>ZENER DIODES</b>            |                           |            |                             |      |
| 31101300                       | RD 5.1EB2                 | KLM-683    |                             | 1    |
| 31101600                       | RD 5.6EB1                 |            |                             | 1    |
| <b>LED</b>                     |                           |            |                             |      |
| 31200700                       | PR-5534S                  |            |                             | 1    |
| <b>ICs</b>                     |                           |            |                             |      |
| 32002011                       | MN-3007                   | KLM-683    |                             | 1    |
| 32002014                       | MN-3101                   |            |                             | 1    |
| 32021022                       | TL-062                    |            |                             | 3    |
| <b>P.C. BOARD WITH PARTS</b>   |                           |            |                             |      |
| 34068300                       | KLM-683                   |            |                             | 1    |
| 34069400                       | KLM-694                   |            |                             | 1    |

| PARTS CODE             | PARTS NAME SPECIFICATIONS     | P.C. BOARD | IDENTIFICATION NO. FUNCTION | QTY |
|------------------------|-------------------------------|------------|-----------------------------|-----|
| <b>SEMI FIXED VRs</b>  |                               |            |                             |     |
| 35001310               | H0651 A 10KB                  | KLM-683    |                             | 1   |
| 35001322               | H0651 A 22KB                  |            |                             | 2   |
| 35001447               | H0651 A 470KB                 |            |                             | 1   |
| <b>VRs</b>             |                               |            |                             |     |
| 36012100               | K161100T6E 100KB<br>VM10A-C29 |            |                             | 2   |
| 36012500               | K161100T6E 1MC<br>VM10A-C29E  |            |                             | 1   |
| 36013100               | K161100T6E 10KC<br>VM10A-C29E |            |                             | 1   |
| <b>FOOT SW</b>         |                               |            |                             |     |
| 37507100               | KFS-2                         |            |                             | 1   |
| <b>PHONE JACKS</b>     |                               |            |                             |     |
| 45000600               | S-G 7622 #06                  | KLM-683    |                             | 1   |
| 45001100               | S-G 7713 #04                  |            |                             | 1   |
| <b>POWER JACK</b>      |                               |            |                             |     |
| 45400300               | HEC-0470-01-230               | KLM-683    |                             | 1   |
| <b>SPONGE</b>          |                               |            |                             |     |
| 50003400               | 4 x 20 x 40                   |            |                             | 1   |
| <b>RUBBER STOPPERS</b> |                               |            |                             |     |
| 50009300               | No. 1 LARGE                   |            |                             | 1   |
| 50009400               | No. 2 SMALL                   |            |                             | 1   |
| <b>BATTERY</b>         |                               |            |                             |     |
| 52000400               | 006PUE 9V                     |            |                             | 1   |
| <b>BATTERY SNAP</b>    |                               |            |                             |     |
| 54005100               | I-TYPE 80MM                   |            |                             | 1   |

| PARTS CODE                | PARTS NAME SPECIFICATIONS | P.C. BOARD | IDENTIFICATION NO. FUNCTION | QTY |
|---------------------------|---------------------------|------------|-----------------------------|-----|
| <b>LED HOLDER</b>         |                           |            |                             |     |
| 57504000                  | X-TYPE No. 4 5.8MM        |            |                             | 1   |
| <b>EFFECTS KNOB</b>       |                           |            |                             |     |
| 62014300                  | SMALL                     |            |                             | 4   |
| <b>PHONE JACK SUPPORT</b> |                           |            |                             |     |
| 64030500                  |                           |            |                             | 1   |
| <b>P.C.B PROTECTOR</b>    |                           |            |                             |     |
| 64607000                  |                           |            |                             | 1   |
| <b>REAR COVER</b>         |                           |            |                             |     |
| 64703100                  |                           |            |                             | 1   |
| <b>BATTERY COVER</b>      |                           |            |                             |     |
| 64703200                  |                           |            |                             | 1   |
| <b>FRONT COVER</b>        |                           |            |                             |     |
| 64703400                  |                           |            |                             | 1   |
| <b>SCREWS</b>             |                           |            |                             |     |
| 70060323                  | FE P BZMC 3 x 23          |            |                             | 4   |
| 70130304                  | FE F ZMC 3 x 4            |            |                             | 1   |
| 72130306                  | TP2G F ZMC 3 x 6          |            |                             | 2   |
| 72530308                  | TP2G B ZMC 3 x 8          |            |                             | 3   |
| <b>NUT</b>                |                           |            |                             |     |
| 77310900                  | VN N-39                   |            |                             | 2   |
| <b>PHONE JACK WASHER</b>  |                           |            |                             |     |
| 79040914                  | N-39 x 14 x 0.            |            |                             | 2   |