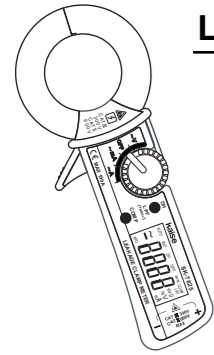


kaise



**LEAKAGE CLAMP METER
INSTRUCTION MANUAL**

SK-7820/7825

KAISE CORPORATION

FOR SAFETY MEASUREMENTS!!

To prevent an electrical shock hazard to the operator and/or damage to the instruments, read this instruction manual carefully before using the Clamp Meter. WARNINGS with the symbol ⚠ on the Clamp Meter and this instruction manual are highly important.

Important Symbols

- ⚠ The symbol listed in IEC 61010-1 and ISO 3864 means "Caution (refer to instruction manual)".
- ⚠ **WARNING** : The symbol in this manual advises the user of an electrical shock hazard that could result in serious injury or even death.
- ⚠ **CAUTION** : The symbol in this manual advises the user of an electrical shock hazard that could cause injury or material damages.

⚠ WARNING

Measurement on High Power Line is very dangerous. It sometimes includes High Surge Voltage that could cause dangerous arcs of explosive short in the instrument and could result in serious injury to the operator. For dangerous voltage measurement on High Power Line or High Voltage Circuit, always keep the instrument away from your body without holding it in your hands. Do not touch the Clamp Meter, its Test Leads, and any part of the circuit.

INTRODUCTION

Thank you for purchasing KAISE "MODEL SK-7820/7825 LEAKAGE CLAMP METER". To obtain the maximum performance of this instrument, read this Instruction Manual carefully, and take safe measurement.

1. UNPACKING AND INSPECTIONS

Inspect the instrument and accessories for transport damage. If there is any damage or missing items, ask your local dealer for replacement. Confirm that the following items are contained in the package.

- | | |
|--------------------------|--------|
| 1. Leakage Clamp Meter | 1 pce. |
| 2. Test Lead (100-63) | 1 set |
| 3. Carrying Case (1020) | 1 pce. |
| 4. Batteries (1.5V LR03) | 2 pcs. |
| 5. Instruction Manual | 1 pce. |

2. SPECIFICATIONS

2-1. GENERAL SPECIFICATIONS

1. **DISPLAY (LCD)**
 - a. **Numerical Display** : 4000 count, Maximum reading 4050, 12mm high
 - b. **Units and Symbols** : ~, -, mA, A, mV, V, Ω, kΩ, MΩ, Hz, ((=)), COMP, LPF, DIFF, DH, APO, BAT, AUTO and decimal point
2. **OPERATING PRINCIPLE** : Σ conversion
3. **AC MEASUREMENT** : Average rectification
4. **SAMPLING RATE** : 2 times / second
5. **RANGE SELECTION** : Auto-ranging (mA / A : switch selection)
6. **OVERLOAD INDICATION** : "OL" indication
7. **BATTERY WARNING** : "BAT" indication at approx. 2.5V or less.
8. **DISPLAY HOLD** : Hold indicating values by DH Key
9. **COMPARATOR** :
 - a. **Setting range** : 1 to 99mA
 - b. **Exceeding alert** : Buzzer, vibration, and LCD blink
10. **LOW PASS FILTER** : Reject high frequency (cutoff frequency : approx.150Hz)
11. **AUTO POWER OFF** : Power turns off automatically after 15 minutes. (cancelable)

①

12. **OVERLOAD PROTECTION (50/60Hz)**:
 - a. **Current** : 150A rms for 1 minute (600V line)
 - b. **Voltage** : 900V AC rms for 1 minute
13. **DIELECTRIC STRENGTH** : 3.54kV AC rms for 1 minute (50/60Hz) (between input terminal and case)
14. **OPERATABLE TEMPERATURE & HUMIDITY** : 0°C to 40°C, 80%RH or lower in non-condensing.
15. **STORAGE TEMPERATURE & HUMIDITY** : -20°C to 60°C, 70%RH or lower in non-condensing.
16. **TEMPERATURE COEFFICIENT** : Accuracy in 23°C±5°C × 0.1 / °C
17. **SAFETY LEVEL** : CE Marking approved (IEC-61010-1, CAT III 300V, CAT II 600V and EMC Test passed.)
18. **POWER SUPPLY** : 1.5V (L)R03 (AAA) batteries × 2 ※Alkaline cell recommended.
19. **POWER CONSUMPTION** :
 - a. **Normal** : Approx. 7mA
 - b. **During buzzer sounds** : Approx. 14 mA
 - c. **During vibrating** : Approx. 80mA
20. **CONTINUOUS OPERATING TIME** : Approx. 100 hours (Alkaline cell), Approx. 50 hours (Manganese cell), ※without using comparator function.
21. **CONDUCTOR DIAMETER** : SK-7820 : φ 24mm max., SK-7825 : φ 40mm max.
22. **DIMENSIONS & WEIGHT** :
 - SK-7820 : 168(H) × 58(W) × 27(D)mm, Approx. 170g (Including batteries)
 - SK-7825 : 184(H) × 58(W) × 27(D)mm, Approx. 180g (Including batteries)
23. **ACCESSORIES** : 100-63 Test Lead × 1 set, 1020 Carrying Case, 1.5V LR03 (AAA) batteries × 2, Instruction Manual
24. **OPTIONAL ACCESSORIES** : 880 Line Separator, 940 Alligator Clip

2-2. MEASUREMENT SPECIFICATIONS

(23°C±5°C、<80%RH in non-condensing)

1. AC Current (~ mA)		Average Rectification		
Range	Accuracy (50/60Hz)	Resolution	Max. Input Current	Overload Protection
40.00mA	±1.0%rdg±5dgt (1.01mA~)	0.01mA	400mA rms	150A rms (50/60Hz for 1 minute)
400.0mA	±1.0%rdg±7dgt (0.10 to 1.00mA)	0.1mA		

※Filter ON (50/60Hz): add ±1.0%rdg±3dgt
Frequency Characteristic : (40~400Hz) : add ±1.0%rdg±3dgt

2. AC Current (~ A)		Average Rectification		
Range	Accuracy (50/60Hz)	Resolution	Max. Input Current	Overload Protection
40.00A	±2.0%rdg±5dgt (1.01A ~)	0.01A	100A rms	150A rms (50/60Hz for 1 minute)
100.0A	±2.0%rdg±5dgt (40.1 to 80.0A)	0.1A		
	±4.0%rdg±5dgt (80.1 to 100.0A)			

※Filter ON (50/60Hz): add ±1.0%rdg±3dgt
Frequency Characteristic : (40~400Hz) : add ±1.0%rdg±3dgt

3. AC Voltage (~ V)		Average Rectification		
Range	Accuracy (50/60Hz)	Resolution	Max. Input Voltage	Overload Protection
400.0V	±2.0%rdg±5dgt (10.1V ~)	0.1V	600V rms	900V AC rms (50/60Hz for 1 minute)
600V	±2.0%rdg±7dgt (5.0 to 10.0V)	1V		

※Filter ON (50/60Hz): add ±1.0%rdg±3dgt
Frequency Characteristic : (40~400Hz) : add ±1.0%rdg±3dgt

3. SAFETY PRECAUTIONS

Correct knowledge of electric measurements is essential to avoid unexpected danger such as operator's injury or damage to the instrument. Read carefully and observe the following precautions for safety measurements.

3-1. WARNINGS

⚠ **WARNING 1. Checks of Body and Test Lead**
Before measurement, confirm the body of this instrument and handle insulators of the Test Lead have no cracks or any other damages. Dust, grease and moisture must be removed.

⚠ **WARNING 2. Warning for High Power Line Measurements**
High Power Line (High Energy Circuits) such as Distribution Transformers, Bus Bars and Large Motors are very dangerous. High Power Line sometimes includes High Surge Voltage that could cause explosive short in the instrument and could result in shock hazard. For voltage measurement of High Power Line, do not touch Clamp Meter, its Test Leads, and any part of the circuit.

⚠ **WARNING 3. Warning for High Voltage Measurements**
Even for Low Energy Circuits of electric/electronic appliances, such as heating elements, small motors, line cords and plugs, High Voltage Measurements are very dangerous. Do not touch Clamp Meter, Test Leads, and any part of the circuit. Generally, shock hazard could occur when the current between the circuit, that involves more than 33V rms or 46.7V DC or peak, and ground goes up to 0.5mA or more.

⚠ **WARNING 4. Dangerous Voltage Measurement Procedure**
For dangerous voltage measurement, strictly observe the warnings below. (refer to fig.1)

- Do not hold Clamp Meter and test leads in your hands. Keep safety distance from power source or circuit to be measured not to touch the dangerous voltage.
- Attach black and red alligator clips to test lead pins.
- Turn off the power of the circuit to be measured when connecting test leads.
- After measurement, before detaching alligator clips (test leads), turn the circuit power off and discharge the all capacitors.

②

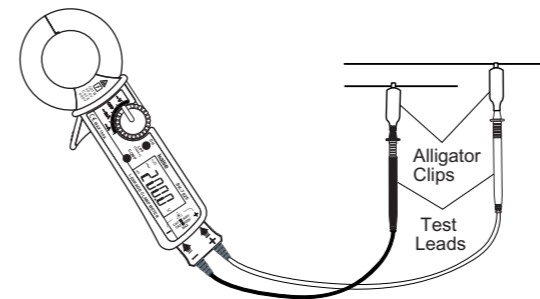


fig. 1

In case of live-line measurement, strictly observe the warnings below (refer to fig 2.)

- Do not hold Clamp Meter in your hands. Keep safety distance from power source or circuit to be measured not to touch the dangerous voltage.
- Black test lead : Attach black alligator clip and connect to - (earth) side of the circuit.
- Red test lead : Hold with one hand and connect to + (positive) side of the circuit.

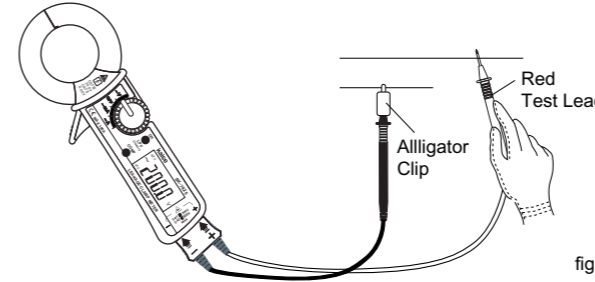


fig. 2

⚠ **WARNING 5. Correct Selection of FUNCTION Switch**
Always confirm that FUNCTION Switch is set to the correct position. Do not measure voltage at ~mA and ~A positions.

⚠ **WARNING 6. Maximum Input Observance**
Do not measure voltage or current that exceed the specified maximum input values.

⚠ **WARNING 7. Test Lead Detachment**
Detach test leads from measuring circuit before switching measurement functions or removing battery cover for battery replacement.

⚠ **WARNING 8. Safety Line**
Do not put your fingers over the safety line while current measurement.

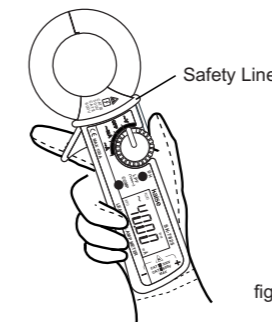


fig.3

3-2. PRECAUTION FOR USE

1. Do not power-on around strong-magnetic-field generated equipments

To avoid measurement error due to the noise effects to the internal "auto-initialize zero" circuit, turn the power on keeping the unit away from such equipments like transformer or motor. For example, keep 1m or more from 100A conductors. Measurement must be started after confirming "0" indication on LCD.

3-3. GENERAL WARNINGS AND CAUTIONS

- ⚠ **WARNING 1.** Children and the persons who do not have enough knowledge about electric measurements must not use this instrument.
- ⚠ **WARNING 2.** Do not measure the electricity naked or barefooted to protect yourself from electrical shock hazard.
- ⚠ **WARNING 3.** Be careful not to get hurt with the sharp test lead pins.
- ⚠ **CAUTION 1.** Do not polish the case or attempt to clean it with any cleaning fluid like gasoline or benzine. If necessary, use silicon oil or antistatic fluid.
- ⚠ **CAUTION 2.** Avoid the clamp meter from hard mechanical shock or vibration, high temperature and strong magnetic field.
- ⚠ **CAUTION 3.** Remove the batteries when the clamp meter is out of use for a long time. The exhausted batteries might leak electrolyte and corrode the inside.
- ⚠ **CAUTION 4.** Do not measure AC high-frequency current. Clamp head becomes heated and could damage the instrument.

③

4. NAME ILLUSTRATION

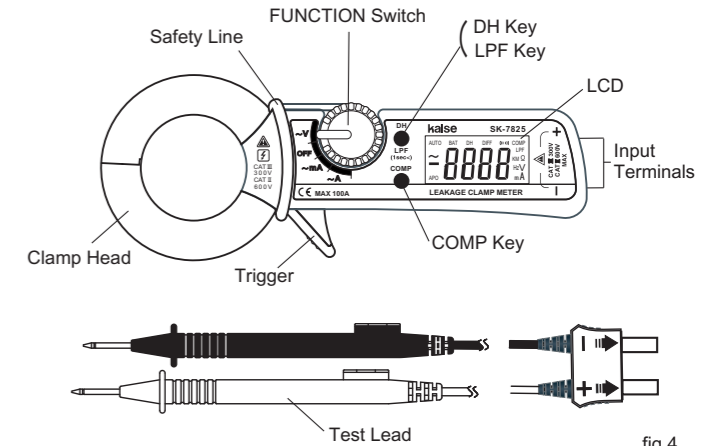
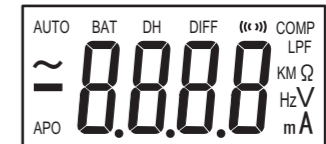


fig.4

4-1. LCD



- AUTO : Lights up in auto-ranging measurement
- BAT : Low battery warning
- ~ : Lights up in AC current / voltage measurement
- APO : Lights up when auto power off is enabled
- DH : Lights up in display hold function
- COMP : Lights up in comparator function
- LPF : Lights up when low pass filter is enabled
- ((=)) : Lights up when vibration is enabled (~mA measurement only. Not available for ~A and ~V measurements.)
- mA, A : Lights up in current measurement
- V : Lights up in voltage measurement

4-2. Clamp Head

Clamp on conductor(s) in AC current measurement.

4-3. Safety Line

The line to protect yourself against electrical shock hazard. Do not put your fingers over this line while current measurement.

4-4. FUNCTION Switch

Turns the power on and selects measurement functions. After measurement, turn it to "OFF".

4-5. DH Key : Display Hold

Holds indicating measurement values by pressing this key for 0.5 seconds or less. ("DH" lights up)
To cancel it : Press DH Key again for 0.5 seconds or less.

4-6. LPF Key : Low Pass Filter Measurement

Activates low pass filter by pressing this key for 1 second or more. ("LPF" lights up)
Low Pass Filter : high-frequency noise filter to reject approx.150Hz or more.
To cancel it : Press LPF Key again for 1 second or more.

4-7. COMP Key : Comparator Function

Buzzer sounds and vibrates if measuring value exceeds the setting value. This function is only effective in ~ mA measurement. For details, refer to 「5-2. AC LEAKAGE CURRENT MEASUREMENT (~mA)」.
NOTE : Setting range is 1 to 99mA. Vibration alert is cancelable.
NOTE : This function is not available for ~A and ~V measurements.

4-8. Input Terminals · Test Leads

Use for AC Voltage (~V) measurement. Plug test lead connector into input terminals matching "+" and "-".

⚠ **WARNING.** Unplug test leads from input terminals while current measurement.

4-9. Trigger

Opens and close the clamp head. Release fingers from trigger after clamping conductor(s).

④

5. MEASUREMENT PROCEDURES

5-1. PREPARATION FOR USE

1. INSTRUCTION MANUAL

Read INSTRUCTION MANUAL carefully to understand the specification and functions correctly. 「3. SAFETY PRECAUTIONS」 is highly important for safety measurement.

2. BATTERY

Before using this instrument, install 2 of 1.5V (L)R03 (AAA) batteries referring to 「6-1. BATTERY REPLACEMENT」. Replace them in the same way when "BAT" lights up on LCD.

3. OVERLOAD INDICATION

"OL" lights up on LCD if measurement value exceeds maximum indicatable value of each measurement range (4050 digits).

4. AUTO POWER OFF

Power turns off automatically after approx. 15 minutes of last FUNCTION Switch operation to conserve battery life. (Small current consumption remains. After measurement, be sure to set FUNCTION Switch to "OFF".)

To cancel it : Hold down DH Key and turn the power on. ("APO" disappears)

5. SYMBOL MARK

The following symbol marks shown on the instrument and instruction manual are listed in IEC 61010-1 and ISO 3864.

	Caution (refer to instruction manual.)
	Caution for current-applied dangerous conductor
	Alternating Current (AC)
	Double Insulation
	CE Marking Conformity

5-2. AC LEAKAGE CURRENT MEASUREMENT (~mA)

⚠ WARNINGS

- Do not measure any current that might exceed maximum input value (400mA AC / 600V line).
- Read 「3. SAFETY PRECAUTIONS」 carefully to avoid electric shock hazard and serious damage to the instrument.
- Unplug test leads from input terminals while current measurement.
- Do not twist clamp head while measurement. Measurement should be incorrect if any pressure is applied to the clamp head.
- Do not touch any part of power line or the circuit to be measured.

- Set FUNCTION Switch to "~mA". Confirm "0.00mA" is indicated on LCD.

NOTE : Do not start measurement until "0.00mA" is indicated nor open clamp head.

- Open Clamp Head, and clamp-on conductor(s) at the center of clamp head.

a. Leakage current measurement for earthing conductor

Clamp-on a single conductor.

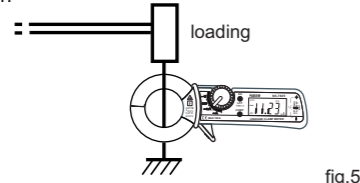


fig.5

b. Single-phase two-wire measurement

Clamp-on two wires.

※ Clamp-on three wires for single-phase three-wire measurement.

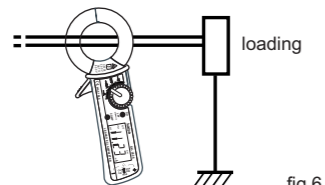


fig.6

c. Three-phase three-wire measurement

Clamp-on three wires.

※ Clamp-on four wires for three-phase four-wire measurement.

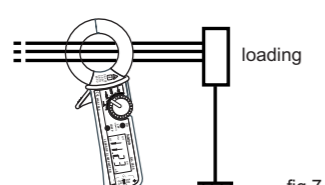


fig.7

d. Current measurement for general circuit

Clamp-on a single conductor.

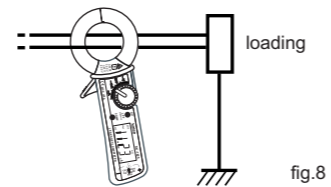


fig.8

- Read the measurement value on LCD.
- After measurement, unclamp from the conductor(s) and set FUNCTION Switch to "OFF".

Supporting Functions :

Low Pass Filter Measurement, Display Hold (Refer to 4-5 and 4-6.)

● COMPARATOR FUNCTION

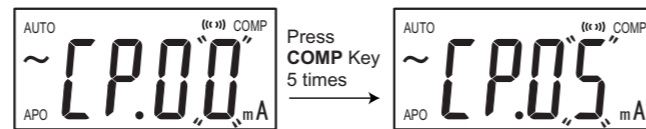
Buzzer sounds and vibrates if measuring value exceeds the setting value. Vibration alert is cancelable.

Comparator Settings

- Set FUNCTION Switch to "~mA".
To cancel vibration : Hold down COMP Key and set FUNCTION Switch to "~mA". (" ((((" disappears)
- Press COMP Key for 0.5 seconds or less. "COMP" lights up and enter comparator setting mode. LCD indicates "CP.00", and first digit blinks.
- Comparator value can be set in the range of 1 to 99mA.
Set first digit (blinking) by COMP Key. Press DH Key for 0.5 seconds or less and tenth digit blinks. Set tenth digit by COMP Key.
- When the setting is done, press DH Key for 1 second or more to start comparator measurement.
- Buzzer sounds and vibrates if measuring value exceeds the setting value.
※ No vibration if canceled.

Setting Example : Set comparator value at 35mA

- Entered comparator setting mode.
- Press COMP Key 5 times and set first digit.



- Press DH Key for 0.5 seconds or less.
Blinking moves to tenth digit.



- Press COMP Key 3 times and set tenth digit.



- Press DH Key for 1 second or more.
Start comparator measurement.



Confirm and Charge the Setting Value

Confirm : Press COMP Key for 0.5 seconds or less during comparator measurement. Setting value is displayed for 3 seconds.

Change : Press COMP Key again during the setting value display. To restart comparator measurement after charging the settings, press DH Key for 1 second or more.

Stop Comparator Measurement

Press COMP Key for 1 second or more during comparator measurement. ("COMP" disappears) Setting value is saved until turning the power off.

NOTE : Turn the power off to stop this function under comparator setting mode.

5-3. AC CURRENT MEASUREMENT (~A)

⚠ WARNINGS

- Do not measure any current that might exceed maximum input value (100A AC / 600V line).
- Read 「3. SAFETY PRECAUTIONS」 carefully to avoid electric shock hazard and serious damage to the instrument.
- Unplug test leads from input terminals while current measurement.
- Do not twist clamp head while measurement. Measurement should be incorrect if any pressure is applied to the clamp head.
- Do not touch any part of power line or the circuit to be measured.

- Set FUNCTION Switch to "~A". Confirm "0.00A" is indicated on LCD.

NOTE : Do not start measurement until "0.00A" is indicated nor open clamp head.

- Open clamp head, and clamp-on a conductor at the center of clamp head.
NOTE : Unable to measure if several conductors are clamped.
- Read the measurement value on LCD.
- After measurement, unclamp from the conductor and set FUNCTION Switch to "OFF".

Supporting Functions :

Low Pass Filter Measurement, Display Hold. (Refer to 4-5 and 4-6)

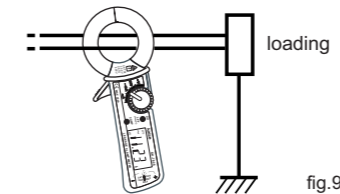


fig.9

5-4. AC VOLTAGE MEASUREMENT (~V)

⚠ WARNINGS

- Do not measure any voltage that might exceed maximum input value (600V AC).
- Read 「3. SAFETY PRECAUTIONS」 carefully to avoid electric shock hazard and serious damage to the instrument.
- For safety measurement, place the clamp meter away from your body not holding it in your hands.
- Do not touch any part of power line or the circuit to be measured.

- Plug test lead connector into input terminals matching "+" and "-".
- Set FUNCTION Switch to "~V". Confirm "0.0V" is indicated on LCD.

NOTE : Do not start measurement and not make test leads to touch a live line until "0.0V" is indicated.

- Connect black test lead to - (earth) side and red test lead to + (positive) side of the measuring circuit.

NOTE : Connect clamp meter IN PARALLEL to the circuit.

NOTE : Use alligator clips for dangerous voltage measurement.

- Read the measurement value on LCD.
- After measurement, set FUNCTION Switch to "OFF".

Supporting Functions :

Low Pass Filter Measurement, Display Hold. (Refer to 4-5 and 4-6)

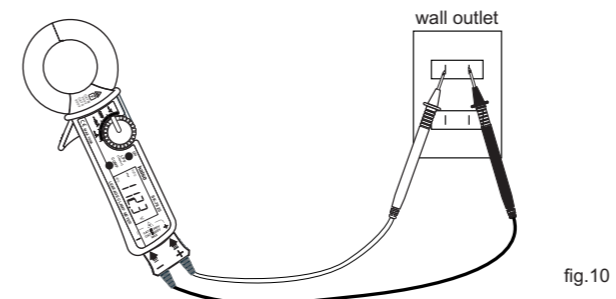


fig.10

6. MAINTENANCE

6-1. BATTERY REPLACEMENT

⚠ WARNING

To avoid electrical shock, detach instrument and test leads from circuit when to replace battery. Set FUNCTION Switch to "OFF".

Replace the batteries when "BAT" lights up on LCD.

- Turn the power off and detach test leads from the circuit.
- Unscrew Battery Cover and remove exhausted batteries.
- Insert 2 pcs of new 1.5V (L)R03 (AAA) batteries in correct polarity.
- Fix Battery Cover and tighten the screw.

NOTE : Using alkaline cell is recommended.

NOTE : Remove the batteries when the clamp meter is out of use for a long time. The exhausted batteries might leak electrolyte and corrode the inside.

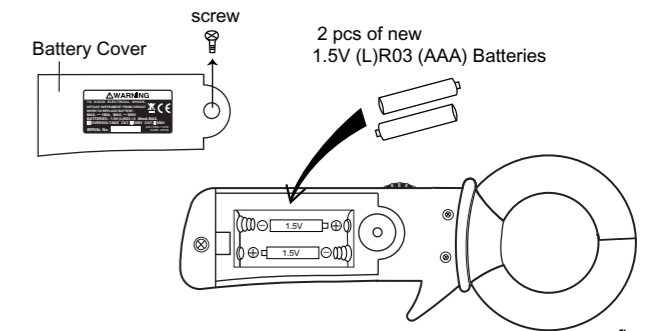


fig. 11

6-2. PERIODICAL CHECK AND CALIBRATION

Periodical check and calibration is necessary to make safety measurements and to maintain the specified accuracy. The recommended check and calibration term is once a year and after the repair service. This service is available at KAISE AUTHORIZED SERVICE AGENCY through your local dealer.

6-3. REPAIR

Repair service is available at KAISE AUTHORIZED SERVICE AGENCY through your local dealer. Pack the instrument securely with your name, address, telephone number and problem details, and ship prepaid to your local dealer.

Check the following items before asking repair service.

- Check the battery connection, polarity, and capacity ("BAT" lights up or not).
- Confirm that FUNCTION Switch is set to the correct position.
- Confirm that the body of this instrument and handle insulators of the Test Leads have no cracks or any other damages.
- Check if any noise affects the instrument. This instrument is fully shielded against noise, but possibly to be affected by very strong noise.

WARRANTY

SK-7820/7825 is warranted in its entirety against any defects of material or workmanship under normal use and service within a period of one year from the date of purchase of the original purchaser. Warranty service is available at KAISE AUTHORIZED SERVICE AGENCY through your local dealer. Their obligation under this warranty is limited to repairing or replacing SK-7820/7825 returned intact or in warrantable defect with proof of purchase and transport charges prepaid. KAISE AUTHORIZED DEALER and the manufacturer, KAISE CORPORATION, shall not be liable for any consequential damages, loss or otherwise. The foregoing warranty is exclusive and in lieu of all other warranties including any warranty of merchantability, whether expressed or implied. This warranty shall not apply to any instrument or other article of equipment which shall have been repaired or altered outside of KAISE AUTHORIZED SERVICE AGENCY, nor which have been subject to misuse, negligence, accident, incorrect repair by users, or any installation or use not in accordance with instructions provided by the manufacturer.

KAISE AUTHORIZED DEALER

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Product specifications and appearance are subject to change without notice due to continual improvements.