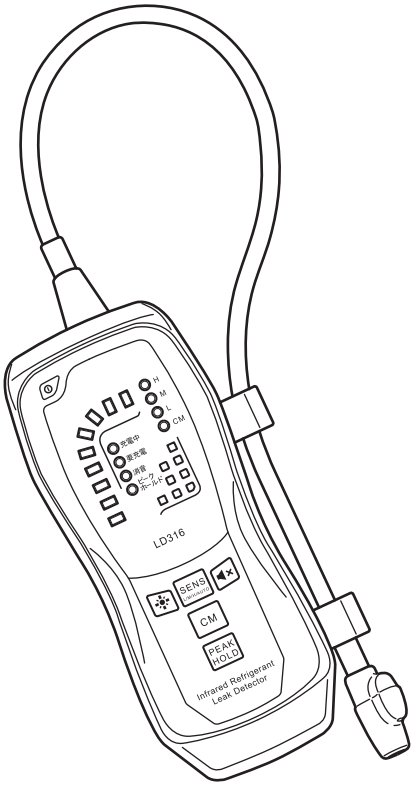
Asada

REFRIGERANT LEAK DETECTOR

LEAK DETECTOR LD316

INSTRUCTION MANUAL



【Read through this manual carefully before using the tool.】

LEAK DETECTOR LD316

SAFETY PRECAUTIONS

Thank you for choosing our Leak Detector LD316.

- This instruction manual must be retained by the user.
- Read this instruction manual carefully and completely before use and thoroughly understand the usage, capacity, cautions and maintenance for correct operation.
- Handle the tool properly to make full use of its functions for safe work.
- After reading the instructions, save this manual so that you can read it when necessary.
- Use the tool for the intended application only. It will do a better job and be safer at the rate for which it was designed.
- Upon receiving the tool, check the following.
  - Check that the tool is built conforming to the specifications stated in your order.
  - Check the overall tool for any damage or deformation caused in transit due to accidents or other reasons.
  - Check that all items and accessories delivered.

In case any discrepancy is found, immediately report the fact to the shop you purchased or our sale office. (The contents of this manual are subject to change without prior notice.)

CLASSIFICATION OF CAUTIONS

Precautionary signs are classified into the following 2 levels.

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. CAUTION it may also be used to alert against unsafe practices.

CONTENTS

CAUTONS IN USE

- Basic cautions to use the tool safely are listed in this section.
- The detailed cautions in operation are described in each chapter.

⚠ WARNING

◆ **When operating tool, choose location that has good ventilation.**
Leakage of gas without sufficient ventilation may cause lack of oxygen cause suffocation.

◆ **Burning refrigerant creates a deadly poisonous Carbon Oxy-Chloride and inhaling of this gas is very dangerous.**
There should be absolutely no flammable material near the working area and must operate under good ventilation.

◆ **Absolutely no fire material and smoking during the work in process.**
Cigarette light may create Carbon Oxy-Chloride and ignite fire.

◆ **Do not disassemble by un-authorized repair person.**

◆ **Use protective eye glass and hand glove during operation.**

◆ **Do not operate the tool with wet hands or in the rain.**
If you handle electric plug and power switch with wet hands or in the rain you may have electric shock.

◆ **Do not use the tool in location where there is much dust.**
It may lead to explosion and heating.

◆ **Do not use the tool in location where ambient temperature and humidity are high.**
It may lead to electric shock and a short in the electrical circuit.
Working temperature range of the tool is 0 ~ 50℃ , working humidity range is less than 70% RH.

◆ **Do not use the tool in location where ambient temperature is out of working temperature range.**

◆ **Do not store the tool in location where ambient temperature is out of -10℃~ 60℃ .**

⚠ WARNING

◆ **The power source should be AC100-240V.**
If the power source is not AC100-240V, it may lead to heating, smoking or fire.

◆ **Do not put heavy things on the cord of AC adapter.**
It may lead to electric shock or fire.

◆ **Do not pull the cord of AC adapter to disconnect from the outlet.**
It may lead to electric shock, fire or inquiry

◆ **Do not use damaged AC adapter.**
It may lead to electric shock or fire.

◆ **Check AC adapter regularly whether it is abnormal, plug AC adapter completely.**
AC adapter with dust, oils and/or fats and uncompleted plugging may lead to electric shock or fire.

◆ **Do not use the AC adapter concurrently with other electrical equipment and avoid overload connection.**
It may lead to fire.

◆ **Do not disassemble and alter.**

◆ **Do not throw in fire, heat and wet battery.**

◆ **Do not use・charge battery in location where near from fire, hot weather, high temperature and high humidity (higher than 45℃ , humidity: higher than 80%RH)**
Store the tools in location where humidity is less than 70%RH

◆ **Use battery only with specifically designated tool.**
Use of any other tools may create a risk of injury and fire.

◆ **In case something is wrong such as smell, heating, deformation, liquid leakage and any other abnormal things during operation, charging and storage, remove battery and do not use.**
If keep using under abnormal condition, It may lead to smoking, burst, fire.

⚠ CAUTION

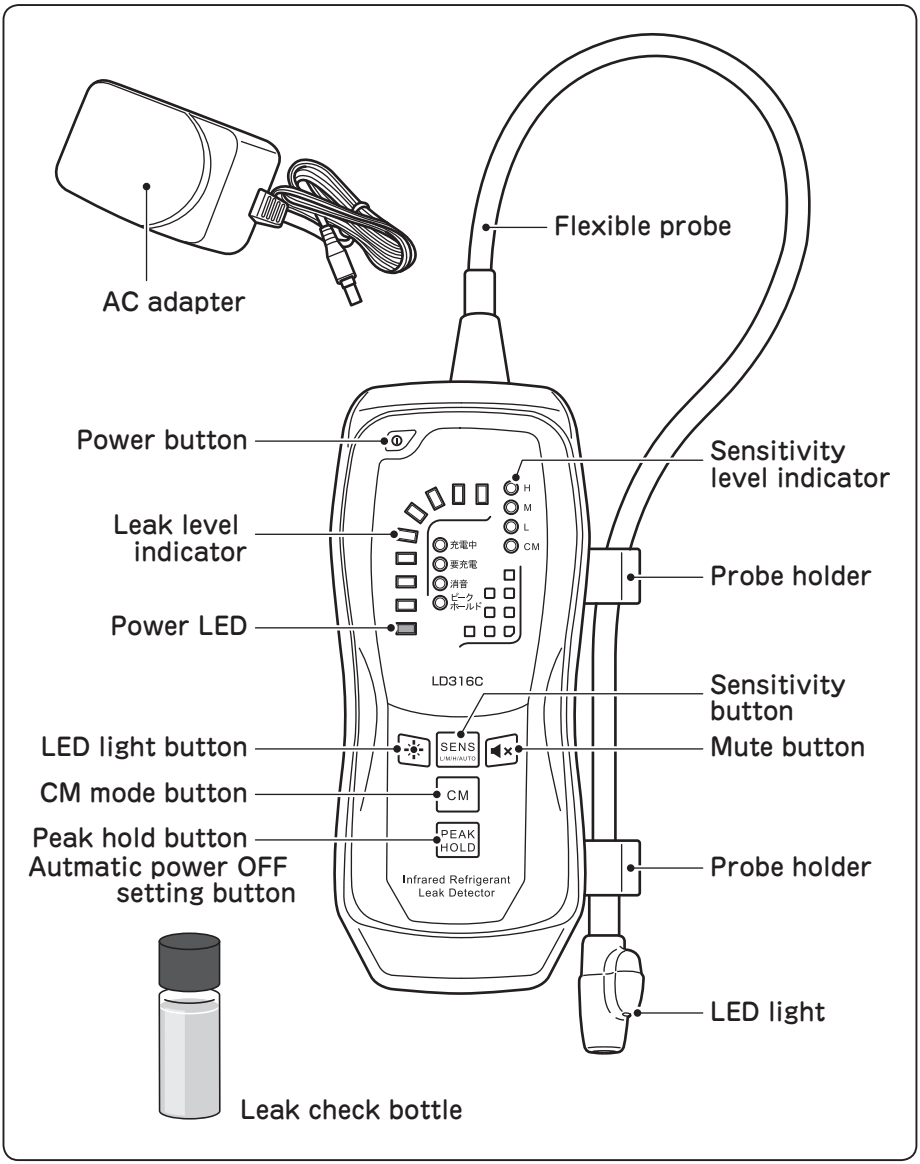
- ◆ Do not let visitors touch the tool.
- ◆ Do not use the tool when the result is unpredictable.
- ◆ Do not use the tool for purposes other than the original intent.
  This tool is designed to detect refrigerant leakage.
- ◆ Do not operate under an excessive heavy load to the tool.
  Operating under an excessive load can cause not only damage to the tool but also an accident.
- ◆ The operating platform and the work area must be kept neat and clean at all time and have enough lighting.
  Poor working environment causes accident.
- ◆ Do not clean the tool with organic solvent.
  Rub with dry cloth or use neutral detergent. The transparency of transmission window will drop.
- ◆ Do not operate the tool if the operator is under fatigue condition or influenced by alcoholic drink or medicines.
- ◆ When the tool is not in use, storage at dry space and out of reach by children.
- ◆ Do not use accessories other than referred in this manual or shown on our catalogue. Use of other accessories may cause problem.
- ◆ When the tool is dropped or hit, inspect immediately for damage, crack, dent, etc.
- ◆ Check every day if there is deformed or corroded area.
- ◆ If abnormal condition (strange smell, vibration, strange noise) is noticed, stop the unit and refer to the Page14 “BEFORE ASKING REPAIRS AND SERVICES” in the manual.
  Contact our authorized distributors for repairs.

LEAK DETECTOR LD316

COMPONENTS OF THE TOOL

Main Parts

If the label comes off or became dirty and unreadable, request us for new label. Replace the label at the same position on the tool.



LEAK DETECTOR LD316

Specification

Item	Leak detector LD316			
Code No.	LD316E			
Applicable refrigerant	HFC/HCFC/CFC/HFO			
Detection method	Infrared type			
Sensitivity	High	Medium	Low	CM mode
	4g/year	7g/year	14g/year	3g/year
Sensor life	20,000 hours			
Working temparature range	0℃ ～ 50℃			
Storage temparature range	−10℃ ～ 60℃			
Working humidity range	Less than 50%RH			
Storage humidity range	Less than 70%RH			
Power	Lithium battery			
Battery life	15hours (continuous operation)			
Probe length	450mm			
Size (L x W x H)	95×48×190mm			
Weight	495g (with battery)			

Standard Accessories

Item	Code No.
Leak detector LD316 body	–
Filter (black) 5pcs	LD014
Filter (white) 5pcs	LD028
Leak check bottle	LD015
Carring case	LD017
AC adapter	LD018
Instruction manual	IM04110

Optional Accessories

品　名	コードNo.
Magnet strap	LD029

PREPARATION

Charging Battery

- Charge the tools with AC adapter.
- Full charging time is for 6 hours and operating time is for approximately 15 hours. However it depends on usage.
- Battery will be exhausted if leave Battery for a long time after charged.
- The working time will be shorter if the charging time increases.
  In order to maintain battery life, avoid frequent additional charging.
- When the operating time is short remarkably even though charged correctly, Battery is almost dead. Contact our authorized distributors for repair.

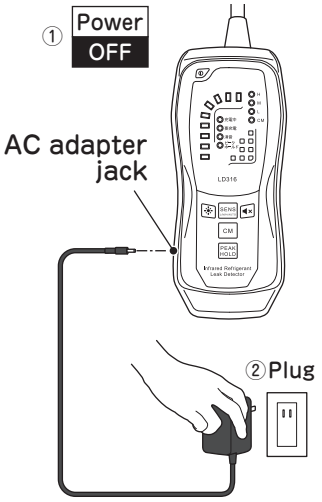
① Check the tool is turned off.
LOW-BATT light turns on when the Battery is low.

⚠ CAUTION

◆Do not plug AC adapter into outlet during tool is tuned on.
It may lead to damage.

② Plug AC adapter into outlet to start charging.
Charging light lights in red during charging.

③ Charging light lights in green after charged.



OPERATION

Wamp Up

⚠ WARNING

◆Do not use for inflammable gas.
It may lead to ignition.

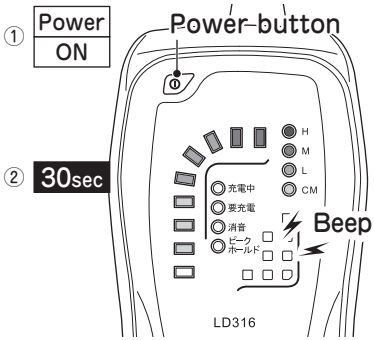
① Press Power button until beep sound can be heard.

② [Starting warm up]

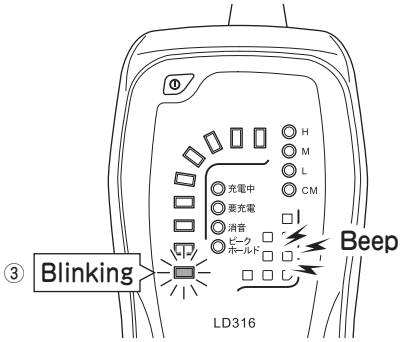
LED light of Leak level indicator moves with lighting during warm up.

※ Warm up takes approximately 30 seconds.

Starting warm up



Completing warm up



③ [Completing warm up]

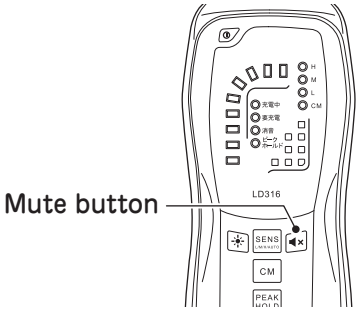
※ Required time for the warm up depends on ambient temprature.

The alarm sounds and Power LED is blinking after completing warm up.

Mute Setting

① Press Mute button and alarm does not sound.

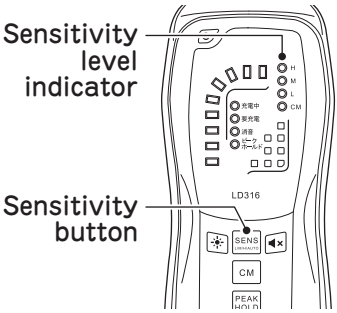
② Press the same button again and alarm sounds again.



LEAK DETECTOR LD316

Setting Sensitivity Mode

① Press the SENS button to change sensitivity level. High, Medium or Low sensitivity level is signed by its respective LED.



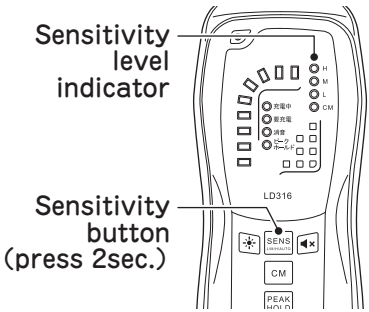
※ The reaction time is 1, 2 seconds. If Probe faces leakage point for more than 3 seconds, auto-zero adjusting works. Power LED is blinking short time, and alarm does not sound even in leakage area.
In this case, keep Probe away from leakage point, and let Probe face clean atmosphere for approximately 1 minute and then restart detection.

※ The tool may react again to remaining refrigerant after the tool reacted first due to high sensitivity of sensor, if the tools faces large amount of refrigerant with high sensitivity mode.

This unit is equipped with “Misdetection prevention stabilizer”, however to prevent misdetection much more, shift Probe slowly refer to P12 at Prevention of misdetection.

Auto Sensitivity Switching Mode

Sensitivity is switched automatically depending on leakage level.



① Press SENS button for more than 2 seconds.
Sensitivity level indicator is blinking.

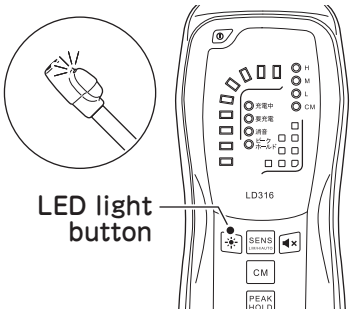
② Once the tool detects leakage, display Leak level indicator with appropriate sensitivity mode.

③ Press again the same button for more than 2 seconds to turn off auto sensitivity switching mode.

LED Light

① Press LED light button to turn on.

② Press again the same button to turn off.



Peak Hold Mode

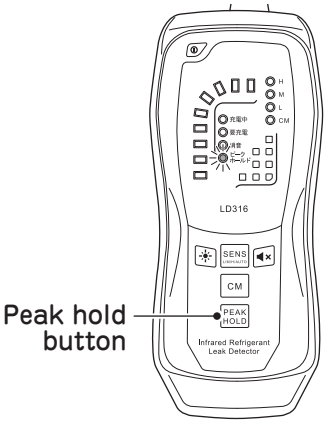
In this mode, Leak level indicator increases depending on leakage level.

Peak hold mode holds Leak level indicator at the highest leakage level.

① Press Peak hold button. The Peak hold indicator LED is lit.

② Leak level indicator will be lit at the highest level leakage

③ Leak level indicator will increase if higher leakage level than previous highest level leakage point is found. So that can detect leakage point.



④ Press the same button again to turn off peak hold mode.

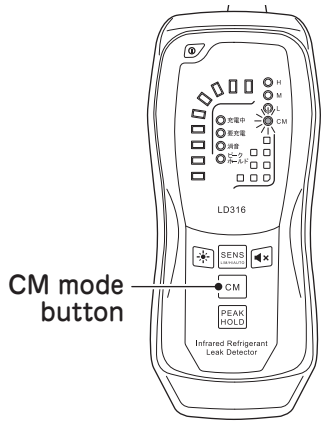
※ The record of peak hold mode will be deleted and Power LED will be lit when switching sensitivity.

CM Mode

① Press CM mode button. CM light will be lit and sensitivity increases to 3g/year.

② Press the same button again to turn off CM mode.

※ The reaction time is 1, 2 seconds.
If Probe faces leakage point for more than 3 seconds, auto-zero adjusting works.
Power LED is blinking short time, and alarm does not sound even in leakage area.
In this case, keep Probe away from leakage point, and let Probe face clean atmosphere for approximately 1 minute and then restart detection.



※ The tool may react again to remaining refrigerant after the tool reacted first due to high sensitivity of sensor, if the tools faces large amount of refrigerant with high sensitivity mode.

※ CM mode is recommended to use under below condition, not use from the beginning in order to improve working efficiency.
- In case cannot detect leakage with high sensitivity mode.
- In case large amount of refrigerant exists in atmosphere already.

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Starting Detection

<Point of setting sensitivity mode (manual) >

① Set high or middle sensitivity mode before narrow down the leakage point.

② Set low sensitivity mode once the tool reacts and specify the leakage point.

③ Check access port and connection part with high sensitivity mode.

④ In case of checking at fixed point, check with "CM" mode.

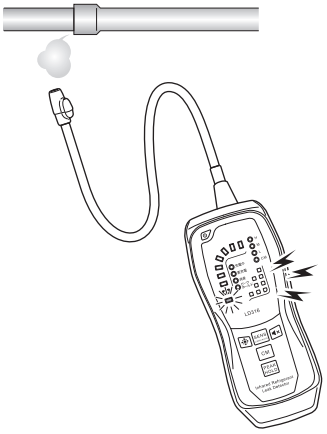
※ In case there is a large amount of leakage, blow air into Probe and check leakage again.

leakage point	sensitivity
① before narrowing	H (high)
	M (middle)
② narrowing	L (low)
③ access port fitting	H (high)
④ Check at fixed point	CM(3g/year)

<Point of setting sensitivity mode (auto) >

① Press SENS button for more than 2 seconds, turn on auto sensitivity switching mode.

② In small amount leakage area, high sensitivity mode will be set and in large amount leakage area, low sensitivity will be set.



<Point of detection>

① Shut down air flows in detecting area.

② Point Probe to lower part of detecting point since refrigerant is heavier than air.

③ If it is hard to specify detecting leakage point, move Probe from lower part to upper part

④ In case of vertical copper tubing line, check the lower part of connection of fitting mainly.

⑤ In case of horizontal copper tubing line, check the lower part of copper tube and fitting mainly.

⑥ Detect one continuous tubing line.

⑦ In the area where leakage may happen, move Prove by approximately 25mm/sec within the area 5 ~ 6mm range.

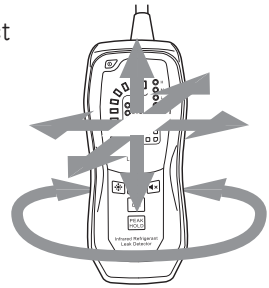
⑧ If the tool detects leakage, move Probe back and specify the leakage point.

※ In case the gas other than refrigerant fills the air, Power LED lights and alarm sounds. In this case, face Probe to clean air.

※ The reaction time is 1, 2 seconds. If Probe faces leakage point for more than 3 seconds, auto-zero adjusting works. Power LED is blinking short time, and alarm does not sound even in leakage area, In this case, keep Probe away from leakage point, and let Probe face clean atmosphere for approximately 1 minute and then restart detection.

※ The tool may react again to remaining refrigerant after the tool reacted first due to high sensitivity of sensor, if the tools faces large amount of refrigerant with high sensitivity mode.

Prevention of misdetection



- This Leak Detector LD316 is equipped with "Misdetection prevention stabilizer" not to misdetect when operate the unit with rapid motion.
- Compare with usual infrared leak detector, misdetection is much less even swing or turn the unit rapidly.
- To detect refrigerant leakage properly without misdetect, pay attention below points.

① Avoid rapid motion and move the unit slowly (about 25mm/sec.) to operate the unit.

The possibility of misdetection would be increased when a current of air blows against top of the Probe.

② Infrared sensor is hard to react to gas except refrigerant gas as the sensor react to infrared rays which has specific wavelength, however misdetect would be occurred in case with gas which has infrared rays with similar wavelength to refrigerant.

※ In case at filled with gas which is not refrigerant gas or Probe faces at leakage point for more than 3 seconds, auto-zero adjustment works. Power LED blinks short time and alarm does not sound even in leakage area.

In this case, keep Probe away from leakage point, and let Probe face clean atmosphere for approximately 1 minute and then restart detection.

※ Due to high sensitivity sensor, after the unit react to large amount of refrigerant with High sensitivity level mode, the unit may react again to remaining refrigerant in the Probe.

MAINTENANCE·INSPECTION

Calibration · Inspection Of Leak Detector

- The sensitivity of the tool cannot be calibrated. Therefore, issuance of a calibration certificate is illegal.

It is possible to issue an inspection certificate by the inspection based on our company standards.

Contact us for Inspection certificate (additional cost).

LEAK DETECTOR LD316

Maintenance Of Sensor Sensitivity

● Leak detector detects refrigerant leakage through sensor. Detectable sensitivity varies depending on sensor condition. Inspect detector regularly to check whether maintain accurate detecting sensitivity.

● We have Detector Checker for inspecting sensor sensitvity in our product range.

Item	LS-4		
Code No.	LD001	LD002	LD008
Leak level	5g/year (23℃)	5g/year (23℃)	5g/year (23℃)
Applicable refrigerant	R134a	R410A	R404A
Connecting port	1/4" flare	1/4" flare (※)	1/4" flare
Gas charging	Outside cyliner	Outside cylinder	Outside cylinder

※ LD002 for R410A with adapter for diffrent diameter 1/4" fale flare × 5/16" female flare.

Item	LS-R	TEK-CHECK
Code No.	LD005	LB703080
Leak level	Set from the range 0.1 ～ 50g/year	5g/year (20℃)
Applicable refrigerant	R134a・R404A・R410A・R503・R600a・R707・SF6 etc.	R134a
Connecting port	1/4" flare	Cylinder combined unit
Gas charging	Outside cylinder	Built in cylinder (31ml)

Operation Check Of Sensor

● Check whether Sensor works correctly with Leak check bottle.

① Open the lid of Leak check bottle.

② Close Probe to Leak check bottle for approximately 1 second after turned on the tool and warm up. Auto-zero adjusting will work, if close Probe for more than 3 seconds.

③ Check the detector reacts leakage and alarm sounds.

※ Replace new bottle once leak material disappeared in bottle.

※ In case no reation

Measures
● Exchange Filter and check again. ● Still no reaction after exchanging Filter, exchange Sensor.

Exchanging Sensor

In case, the tool does not react and cannot get prescribed sensitivity, the sensor may be worn out.
Refer to P15 [Trouble shooting] and contact our authorized distributors for exchanging Sensor.

Exchanging Battery

In case charging time become longer and operation time become shorter extremely despite of full charged, Battery may be almost dead.
Battery life is approximately 300 cycles.
Contact our authorized distributors for exchanging Battery.

Exchanging Filter

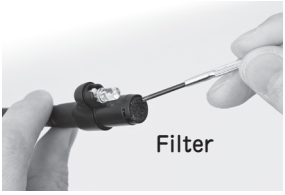
① Remove Tip cover of Probe. (Pic1)

② Remove Filter with small screw driver from groove. (Pic2)

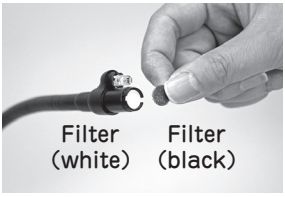
③ Install new Filter.
Install Filter (white) first and Filter (black) next. (Pic3)

④ Install Tip cover of Probe again.

Pic 1



Pic 2



Pic 3

BEFORE ASKING FOR REPAIRS OR SERVICES

● Refer to the following failure diagnosis before asking for repairs.
Contact our authorized distributors for repairs.

Symptom	Cause	Solution
No reaction, slow reaction	Filter is not clean	Exchange new Filter
	Expiry or breakage Sensor	Exchanging new Sensor Contact our authorized distributor for repair
	Pump does not work	Repair of pump Contact our authorized distributor for repair
Cannot turn on the tool	Battery runs out	Charging Battery
Cannot charge Battery. Short operating time with full charged Battery	Battery is dead	Exchange new Battery Contact our authorized distributor for repair
No alarm sound	Press Mute button	Press again Mute button to sound alarm

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