

SMART JECT

[KM-7500]



KMG

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1. Overview

This product is intended for injection of medications such as local anesthetics; it consists of a main body and a battery charger, designed to administer an anesthetic agent at a certain flow. The device can be set at a rate of a 1/16, 1/8, 1/4, 1/2, or FULL ampule and also has an aspiration function. Furthermore, the injection rate can be regulated at high and low speeds.

2. Product features

- (1) Adoption of a pressure sensor
 - ① The pressure sensor button enables the user to adjust an injection speed from 0 to 9.
 - ② The pressure sensor installed in the motor detects external pressures to set an automatic injection mode in operation.
- (2) The device can control the setting of injection quantity and the rate of injection flow.
- (3) The device comes to a full stop when its sensor detects any abnormality in the pressure level pre-determined in the motor.
- (4) The device has an LCD panel where the user can identify battery level, function settings, and the progress of all tasks.
- (5) The device has a speaker by which the user can confirm the operation of tasks.
 - ① Power-On
 - ② Power-Off
 - ③ Backward motion alarm (for aspiration): the sound that goes off at backward movement of the motor
 - ④ Ampule completion sound: the sound goes off when an ampule runs out completely.
 - ⑤ Position indication sound: the sound goes off when a quarter of an ampule is consumed.
 - When an absolute consumption level reaches to the 1/16 mark(1/16)
 - When an absolute consumption level reaches to the 1/8 mark(1/8)
 - When an absolute consumption level reaches to the first quarter mark(1/4)
 - When an absolute consumption level reaches to the one-half mark(1/2)
 - Low-speed sound: the sound goes off when the motor runs at the low speed.
 - High-speed sound: the sound goes off when the motor runs at the high speed.
 - Button key sound: the sound goes off when buttons are pressed

3. Safety features

- (1) Power comes off after sending out a warning sound, when the battery reaches to a low-voltage state.
- (2) Injection still remains in a stop even though power returns after it was turned off.
- (3) When the motor senses any excessive load higher than a pre-determined level, it automatically controls the injection rate.

4. Operating principles

When the cartridge is mounted and power is allowed, the motor sets in motion by the command of the CPU. The gear is shifted to move the cylinder lying under the cartridge upward, pushing the anesthetic drug ampule from the cartridge and passing the liquid through the needle.

5. Precautions for use

(1) Conditions and precautions for use

① Environment

·Do not use the product in a humid place like a bathroom.

② Use conditions

·Recommended to use it at a temperature range of 5°C ~ 35°C

·Maximum relative humidity: 30% ~ 85%

·Atmospheric pressure: 500 ~ 1060 hPa

③ Storage or transportation

·Ambient temperature : 10°C ~ 35°C

·Relative humidity : 30% ~ 75%

·Atmospheric pressure : 700 ~ 1060 hPa

(2) Precautions before use

① Be sure to get familiar with all guidelines and instructions in the User Manual

② Check functions for accurate operation beforehand.

③ Do not change, modify, or alter the device.

④ Make tight and correct connection of all wires.

⑤ Check all functions for safe and accurate operation beforehand as per the procedure described

⑥ Do not bend, distort, or knot cables, for they become overheated during use.

⑦ Do not give too much pressure to the plug or step on it.

⑧ Do not use something inflammable near the product.

⑨ Do not use the product when connected to the power.

⑩ Use dental local anesthesia cartridge ample for single use.

⑪ The user is responsible for high pressure steam sterilization(121°C, 20 minutes) before use the cartridge holder.

⑫ Use the needle(dental) meets the standard (ISO7885:Dental injection needles, ISO9997:Dental cartridge syringes)

(3) Precautions during use

① Stop the product immediately and turn off power when any failure develops with it.

② If the power goes out, turn off the power and make sure the operating handle, switch and etc. are returned to the original position.

(4) Precautions after use



- ① After use, make sure the operating handle, switch and etc. are returned to the original position in accordance with established procedures, and then turn the power off.
- ② Avoid too much force on the connection of the cord like forcibly holding it with a hand when plugging it in and out.
- ③ Isolate and dispose of the product whose use is finished in accordance with Hospital Waste Management Guidelines, do not mix the product whose use is finished and the product not yet used.

(5) Miscellaneous

- ① When the product has a problem, contact the store or the maker for repair
- ② Do not disassemble or modify this equipment
- ③ Do not use acetone, organic solvent and similar solutions to clean the product, and clean it with a dry cloth.
- ④ Use rated power supply.
- ⑤ Use the approved adapter. (DC adapter MICRO USB Type-B standard charger $5V\pm 0.25V$)
- ⑥ Never touch the product with wet hands.
- ⑦ Prohibited from using in the same place with the equipment (for example, X-ray, MRI and etc) which be accompanied by strong electromagnetic.
- ⑧ Must be only be operated by professionals.
- ⑨ Be careful so as not to get the equipment wet with water or anesthesia liquid when using the equipment.
- ⑩ Inaccurate replacement of the battery may present a fire risk.
- ⑪ In case of battery leakage, remove the battery from the device.

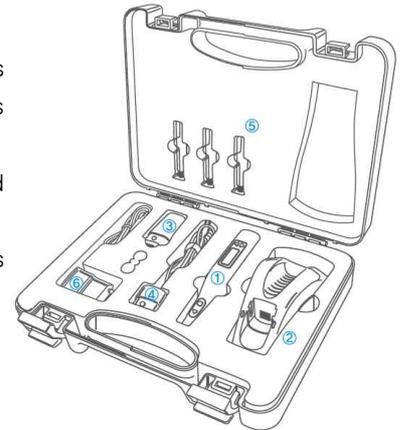
(6) Warnings

- ① **WARNING:** No modification of this equipment is allowed
- ② **WARNING:** Do not modify this equipment without authorization of the manufacturer)
- ③ **WARNING :** If this equipment is modified, appropriate inspection and testing must be conducted to ensure continued safe use of equipment

6. Name and function of each component

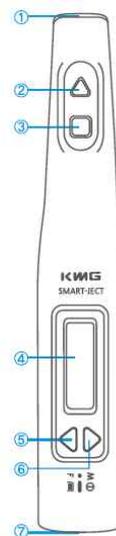
(1) Product components

- ① Main body: is the major component of the product where drug ampules are installed. It regulates the rate and speed of the drug in manners as the user intends.
- ② Charger support: is a structure that holds the main body securely and helps charge the battery
- ③ Battery: is installed in the main body to power the product. It is rechargeable.
- ⑤ Cartridge: is where drug ampules and needles are mounted.



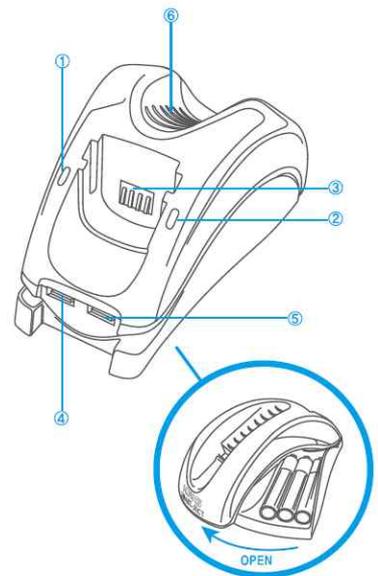
(2) Description of exterior parts – Main body

- ① Cartridge connection part and LED
 - The part where the cartridge is mounted.
 - LED : is inside of the equipment and the blue LED indicates visually, not acoustically that the anesthetic liquid is being spouted.
- ② Start Button(S1)
 - The button triggers the start of injection of an anesthetic agent
- ③ Reverse button (S2)
 - The button puts the device into reverse or selects the aspiration mode.
- ④ LCD display panel
 - The panel displays status information including travel distance and battery level.
- ⑤ Pressure rate and mode settings
 - The key is to set the injection rate of an ampule or turn on/off power
- ⑥ Injection quantity and power
 - The key is to determine pressure limits and injection modes
- ⑦ Battery connection part
 - The part where the battery or the wire jack is connected



(3) Description of exterior parts– Charger support

- ① LED for end of charging(Blue lamp)
 - This LED indicates the end of charging process, when it turns green
- ② LED for charging in progress(Red lamp)
 - This LED indicates charging in progress, when it is lighted red
- ③ Battery connector
 - The connector is for connection of a battery to be charged
- ④ Wire jack connector
 - The connector is for connection of the wire jack
- ⑤ Adaptor connector
 - 5V/1A adaptor connector
- ⑥ Main body support
 - The support is for mounting the main body



(4) Battery and wire jack

- ① Main body and charger connection part

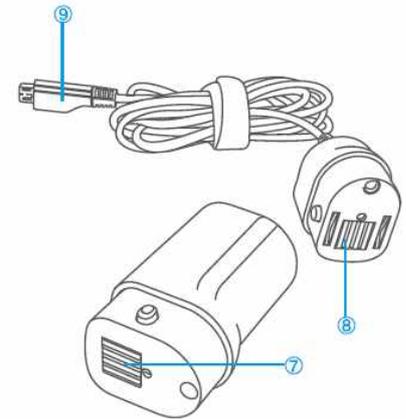
· is where power is connected to supply electricity to the main body or the charger is connected to charge a battery.

② Main body connection part

· is where power is supplied to the main body.

③ Charger power connection part

· is where the wire jack of the charger is connected to supply power to a battery



(5) LCD display panel

① Injection mode

· To display the currently selected injection mode (M1~M5)

② Remaining ampule level

· To display in a figure the remaining quantity of the current ampule

③ Injection indicator

· To display in a number (0~100) the injection quantity that have been administered so far.

④ Battery level indicator

· To display the remaining battery level
( in case of connection to the wire jack)

⑤ Forward (or) aspiration mode

· To display the selection of forward mode or aspiration mode

⑥ Motor operation display

· To display the motor operation in animation

⑦ Current motor speed (in number)

· To display the current motor speed in a number (S0~S9)

⑧ Current motor speed (in bar)

· To display the current motor speed in a bar

⑨ Injection Speed Setting (in number)

· To display the determined injection speed setting in number (0~9)

⑩ Determined pressure

· To display the determined motor pressure limit in a number (F0~F9)

⑪ Current motor pressure (in bar)

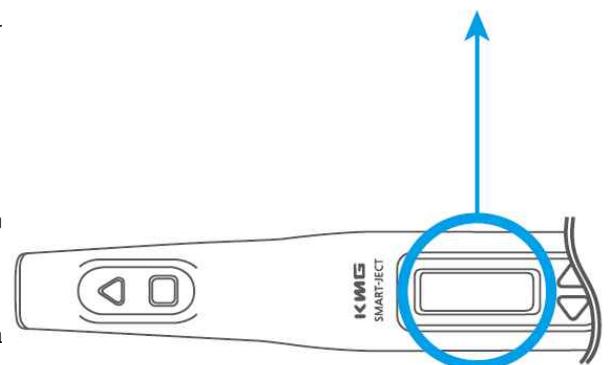
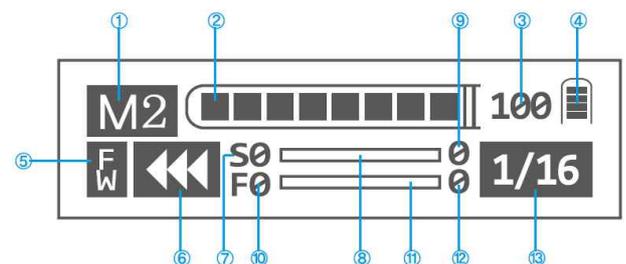
· To display the current motor pressure in a bar

⑫ Current motor pressure (in number)

· To display the current motor pressure in a number (0~9)

⑬ Injection quantity

· To display the determined injection quantity and rate



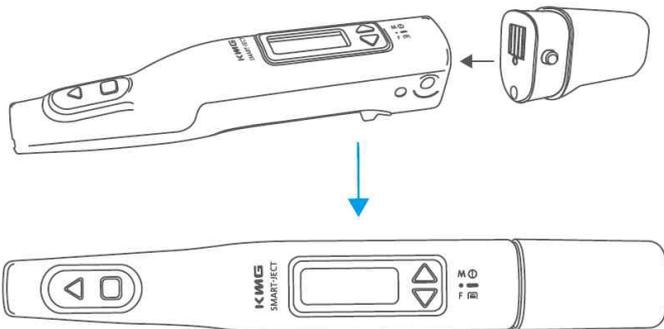
7. How to use

(1) Checking points before use

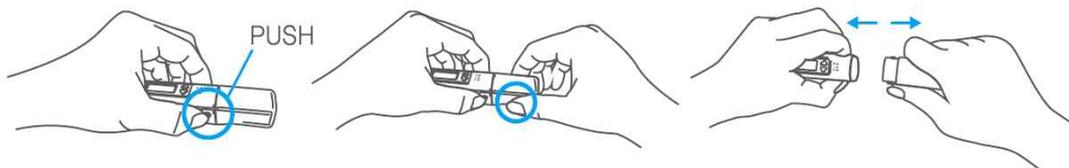
- ① Check whether you have already been familiar with all precautions and instructions and whether there is no problem with power supply.
- ② Check if the battery has enough power; otherwise, replace it with a completely charged one.

(2) Basic operation

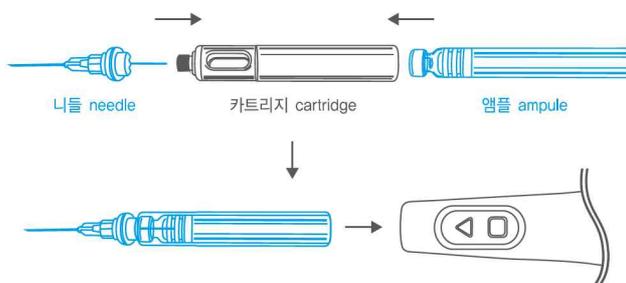
- ① Installation of battery: A completely charged one should be connected to the main body.
 - ※ The battery only for this product must be used.



- ※ Disassembly of battery: Press the protrusions on both sides of the battery with one hand and pull to disassemble it with the other hand.



- ② Installation of cartridge: The cartridge is first installed with an ampule and a needle and inserted into the main body. Turn 90 degrees to the right (clockwise) to mount it; turn 90 degrees to the left (counterclockwise) to dismount it.



③ Description of Control Mark ()

- Make a short press of  the S4 button to select a desired injection rate. Make a press for more than 2 second, power is turned off.
- Make a short press of  the S3 button to select a desired pressure limit. Make a press for more than 2 second, the panel displays the mode selection window.

④ Battery charging LED of Main body support.

- When it is lighted red, the battery is charging. When it is lighted green, the battery has finished

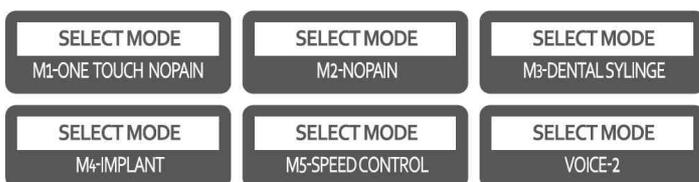
- When it is lighted both red and green, it means the battery connection status is bad or not connected.

(3) How to use

① Power On: Press  the power button S4 for 2 seconds, and the LCD is turned on and is in the standby mode.

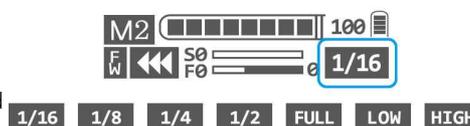
② Mode selection

- Press the mode selection button S3 for 2 seconds, and the panel is changed to display the mode selection window.
- Presses  of the S3 button changes modes. When a desired mode appears, press the S4  button to make selection of it.



③ Injection quantity selection (M1~M5)

- Make a short press  of the S4 button to select a desired injection rate.
- An injection rate and a speed can be chosen from 1/16, 1/8, 1/4, 1/2, and FULL and LOW and HIGH.



Injection quantity	Injection rate
1/16	1/16 of an ampule is injected.
1/8	1/8 of an ampule is injected.
1/4	1/4 of an ampule is injection.
1/2	1/2 of an ampule is injected.
FULL	Injection is first made at a very slow speed for the initial 20 seconds and at a gradually increasing rate for the remaining time.
LOW	Injection is made only at the LOW speed.
HIGH	Injection is made at the HIGH/LOW speed.

- Low-speed(LOW) running time from the start to the end : 4 minutes 55 seconds $\pm 10\%$
- High-speed(HIGH) running time from the start to the end : 49 seconds $\pm 10\%$

④ Motor pressure selection

-  Make short presses of the S3 button to select a desired pressure limit, beyond which the injection comes to a stop and then regulate speeds automatically according to pressures.
- Selection of the pressure F0 means no restriction on pressure, while F9 indicates setting of the maximum pressure.



⑤ Aspiration mode (only in M2,M3 and M4 applicable)

- If the aspiration mode is required, press  the S2 button and motor goes backward, release it and the device will stop.



(4) How to use modes

① M1-ONE TOUCH NOPAIN

- A press of the ◀ S1 button starts injection at a low speed; a press of ◻ the S2 button activates the high speed mode.
- One press of ◀ the S1 button starts injection at the low speed and another press during operation brings the device to a stop.
- One press of ◻ the S2 button starts injection at the high speed and another press during operation brings the device to a stop.
- SLOW : Injected only at low speed.
- HIGH : Possible selection of Low speed and High speed
- Automatic mode function: If select a injection quantity of 1/16, 1/8, 1/4, 1/2 and FULL, Slowly injected at initial state and gradually injected fast.

② M2-NOPAIN

- One-touch operation
- A press of ◀ the S1 button starts injection at a low speed and a press of ◀ the S1 button for more than two seconds activates the high speed mode.
- Another press of ◀ the S1 button during operation brings the mode to a stop.
- SLOW : Injected only at low speed. · HIGH : Possible selection of Low speed and High speed.
- Automatic mode function: If select a injection quantity of 1/16, 1/8, 1/4, 1/2 and FULL, Slowly injected at initial state and gradually injected fast.
- Aspiration function : If the aspiration mode is required, press ◻ the S2 button and motor goes backward, release the S2 button and will stop.

③ M3-SYRINGE

- Syringe mode(pressure sensor button operation)
- Changes its speeds 0 to 9 stages to the intensity of press of ◀ the S1 button. As you press harder and it gains in speed, as press lightly and it loses in speed.
- Aspiration function : If the aspiration mode is required, press ◻ the S2 button and motor goes backward, release the S2 button and will stop.

④ M4-IMPLANT

- Syringe mode(pressure sensor button operation)
- A press on ◀ the S1 button moves the motor forward, while a press on ◻ the S2 button moves the motor backward.
- Changes its speeds to the intensity of press of ◀ the S1 button. As you press harder and it gains in speed, as you press lightly and it loses in speed.
- Aspiration function : If the aspiration mode is required, press ◻ the S2 button and motor goes backward, release the S2 button and will stop.

⑤ M5-SPEED CONTROL

- One-touch operation
- A press of ◀ the S1 button starts injection and another press brings the operation to a stop.
- ◻ The S2 button enables the user to control the speed in the range of 0 through 9 stages.

8. Disassembly after use

- (1) Initialization: When the task is over, press  the S1 button and  the S2 button at the same time for more than 2 seconds, and the cylinder returns to the starting position.
- (2) When  the S4 button is pressed for more than 2 second, power is turned off. In case power is turned off physically by disconnection of the battery rather than by the S4 button, recent settings will not be stored.
- (3) Automatic energy saving mode : power will be turned off unless it is used for about 2 minutes.

9. Miscellaneous

- (1) Voice control : The mode setting window appears when  the S3 button is pressed for 2 seconds.
- (2) Move to the voice setting window using  the S3 button. Press  the S4 button to obtain your desired volume level from VOICE OFF~2. Press  the S3 button to exit the voice control mode. However, be sure to set your desired use mode after the voice level is determined.
- (3) Purchasing method
 - ① Adapter : The adapter used in this equipment, in general, which is widely used in mobile phone charging, is MICRO USB Type-B standard charger 5V±0.25V, so must be obtained from the nearest electronic good store.
 - ② Wire jack / Battery : is only for this equipment, so you should seek direct contact to the head office.
- (4) Location of mounting part: The mounting part of this product is cartridge holder
- (5) Method for disposal of product : the disposal of this product must be discarded in accordance with each country's laws.
- (6) The degree of protection against ingress of water : IPX0

10. Items

- ① Product Name: Anesthesia Conduction Kit
- ② Model Name: KM-7500(SMART-JECT)
- ③ Manufacturer/Manufacturer's Phone No.: KMG Co.,Ltd. / +82-51-804-2213
- ④ Manufacturer's Address: Samsan B/D 2F, 5F, 419, Hasinbeonyeong-ro, Saha-gu, Busan, Korea
- ⑤ Manufacturing Industry Permit No./Manufactured Item Permit No. :
- ⑥ Manufactured date : Manufacturing Serial No. :
- ⑦ Intended Use : Local Anesthesia through Drug Injection
- ⑧ Weight/Package: 276g/1SET
- ⑨ Other Mentioned items
 - Battery: Lithium Polymer 3.7V/1000mAh
 - Rated Power Consumption: 2W
 - Battery charging MICRO USB Type-B standard charger 5V±0.25V
 - Rated Voltage: DC 3.3~5.2V
- ⑩ Protection type and protection extent against electric shock: Internal power supply type instrument, BF-type Class 2 instrument
- ⑪ Use method/Cautions : Refer to operation manual
- ⑫ This product is a medical instrument.

11. Product Warranty

- Warranty period: for main body, valid for one year from the date of purchase; for battery, for 6 months

Product Name	Anesthesia Conduction Kit		Model Name	KM-7500
Warranty period	For main body, valid for one year from the date of purchase; for battery, for 6 months		Serial No.	
Purchase Date			Item Permit No.	
Customer	Name			
	Phone number			
	Address			
Purchase Location				

- ※ Any failure resulting from or in connection with faults, mistakes, or errors attributable to the user shall be subject to paid service.
 - When a problem occurs in connection with negligent or careless handling, or changes, modifications, or alterations of the product by the user.
 - When a problem or damage arises after installation from any other factors attributable to the user including drops during transfer from one place to another.
 - When a problem takes place in relation to use of the product for any purposes other than originally intended.
- ※ The product delivery fee as well as all costs incurred due to repair must be paid by the customer.