ENDOSCOPE AUTO LEAK TESTER

ELT-2000BT

Automatic Test Device

for Detecting Leak in an Endoscope

Instruction Manual

Diabell Endo Master

ENDOSCOPE AUTO LEAK TESTER

ELT-2000BT

Automatic Test Device for Detecting Leak in an Endoscope

Instruction Manual

Contents

인쇄시 페이지 숫자임

1. Precautions before use

▶ **Place this instruction near you and refer to it**.

▶ **For using it safely and correctly, please read this precautions before use.**

  - **Warning : If mishandled, it contains to specify that people can be killed or injured.**

  - **Caution : If mishandled, it contains to specify that people can be injured or material damages can be occurred.**

  ☞ **Material damages mean the loss including houses, properties, livestock, and pets.**

1–1. (Warning) for the power adapter

▶ **Please use the proprietary power adapter!**

▶ **Do not touch it with wet hands!**

▶ **Do not bend too much and damage the power connection.**

1–2. (Warning) for handling the internal battery

▶ **Prohibitions for prevention of shocks, fires, and explosions.**

  - Do not drop or impact the product containing the internal battery.

  - Do not place the product on a hot surface.

  - Test the product every three months

  - Lifetime of the fully charged battery depends on the operation
    environment, number of charges, and hours of use.

  - Assure the internal battery is discharged even not in use.

  - The internal battery is consumable, so have the product tested when
    the lifetime of the battery is reduced by more than half.

  ● CAUTION : RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

      DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

1–3. (Warning) Preventing moisture absorption

▶ **Use in a dry environment!**

▶ **Do not use in an environment where water drops are likely!**

▶ **Please, use the waterproof sheet where there is water!**
  (If required, use the provided waterproof sheet)

1–4. (Caution) for the data management of the internal memory

▶ **Saved data on the internal memory and SD card can be damaged**.

  - According to the data management methods in article of 7–6, you
    must back up the data daily or monthly.

▶ **Before passing 12 months from this month, back up the data.**

  - The data passing 12 months will be saved on the SD card, and will be

deleted from the internal memory. In the process, saved data on the
internal memory and SD card can be damaged.

▶ **Before changing the current date at the configurations, back up the data!**
　- If you change the current date, the data passing 12 months on the
　　internal memory will be saved to the SD card, and delete the data on
　　the internal memory. In the process, saved data on the internal
　　memory and SD card can be damaged.

1–5. (Caution) for general use

▶ **Please, use this product after fully understanding these instructions!**

▶ **Do not use it for any other purpose, except testing leakage!**

▶ **Do not use any other hose or connector, except the proprietary ones!**

▶ **Do not dismantle or remodel the body or coil hoses of the product!**

▶ **Do not bend the coil hose too much!**

▶ **Do not press it when the hose is not fully connected!**

▶ **Do not drop it or impact its body!**

▶ **Please, repeat the test 2 ~ 3 times to increase the accuracy of results.**

▶ **Although the test result shows PASS , it is recommended to test**

　regularly by <Normal> mode because some very small leaks may exist.

▶ **When the test result shows LEAK , confirm the leaking point by**

　testing by <Normal> mode.

▶ **The test results may change slightly depending on the temperature, humidity,**

　expansion coefficient, and the restoring force of the testing system.

┌──┐
│ ※　**The method of attaching <Scope RFID Tag> on the ENDOSCOPE>**
│ 1.　**Attach the tag after cleaning and drying the surface of ENDOSCOPE**
│ 　　**with alcohol.**
│ 2.　**Press the attached tag several times with hand for the stronger adhesion.**
│ 3.　**Use the <Scope RFID Tag> after drying 30 minutes in air.**
└──┘

2. Description of components

1. Leak tester unit (Leak tester, Device)	6. One power adapter (AD/DC adapter, +5V, 2000 mA)
2. One SD card	7. One coil hose
3. One SD card reader	8. Three waterproof sheets
4. Two RFID tags for the tester	9. Printer set
5. Three RFID tags for the scope	10. Instruction manual (Quality Assurance included)

※ Except leak tester unit, consumable components(including internal battery)
   are available to purchase separately.

※ Coil hoses are available to purchase according to manufacturers
   - O (Olympus), E (EndoChoice), P (Pentax), F (Fujinon), and others.

3. The name of each part

3–1. The names of exterior parts
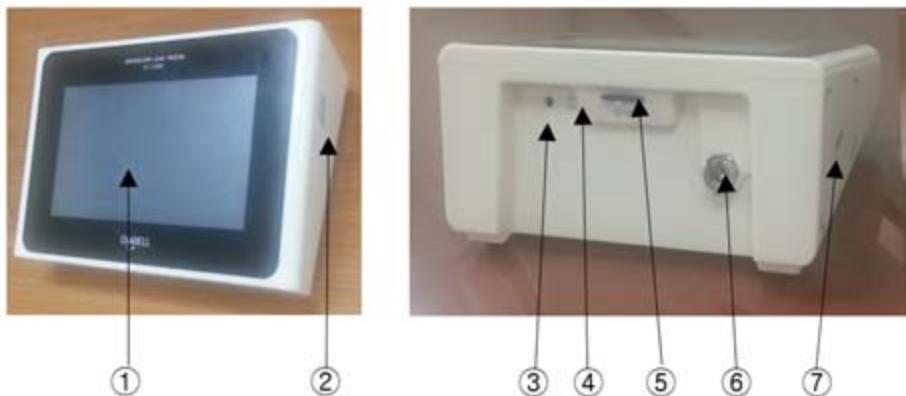
① LCD & touch screen
② Power button
③ DC connector
④ Hole for reset
⑤ SD card
⑥ Air connector
⑦ RFID reader

3–2. The names of display parts
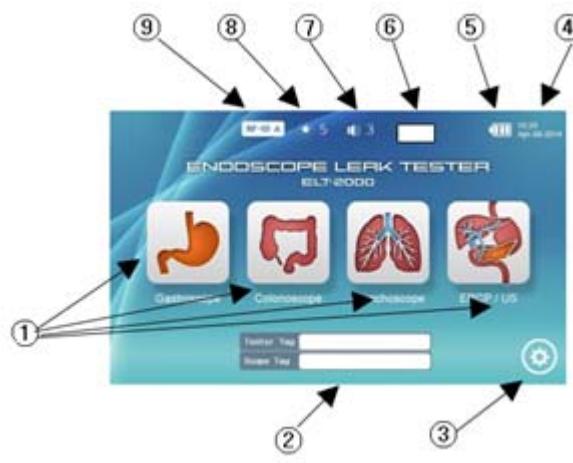
① Icon for selecting the scope
② Tag information
③ Configurations
④ Current date
⑤ Remaining battery indicator
⑥ Power supply (internal
   battery/ DC IN)
⑦ Volume
⑧ Brightness of the LCD
⑨ test mode
   (RFID A/ RFID B/ Normal)

4. Preparation for test

▶ **Make sure that the place where the leak tester is placed is flat.**
  ※ If not, the leak tester can be dropped.

▶ **Check the temperature difference between the device and its environment.**
  ※ If there is a severe difference of temperature, its results would not be
     accurate due to contraction and expansion.

4–1. Preparation of the power supply

▶ **Connect the power adapter to the power connector(DC IN) on the backside.**

▶ **When remaining internal battery indicator shows one block, connect the power adapter**.

- If you connect the power adapter, the internal battery will be automatically charged.

4–1–1. Reset

▶ **If you push the reset switch that is on the backside, the leak tester will be initialized.**

- Using a tool for reset (clip or pin), push the reset switch inside the hole.

- If the function is operated, the tester will automatically turn off.

4–1–2. Power on

▶ **Keep pressing the power button till the screen turns on.**

※ If there is no change for a while (about 5 seconds), or if the device is switched off

after displaying the logo, connect the power adapter.

The battery may need charging.

※ If the same situation occurs after connecting the adapter, have it tested!

4–1–3. Power off

▶ **Keep pressing the power button till the screen turns off, the screen displays a message**

of "Good Bye", then the power will be turned off.

※ If there is no change for a while (about 5 seconds), the leak tester should be reset. (see: 4–1–1. Reset).

4–2. Connection of coil hose

▶ **Connect the coil hose to the air connector of the leak tester and of the scope respectively.**

- The coil hose can be differed by the manufacturers of scopes (O, E, P, F, and others)

(O: Olympus, E: EndoChoice, P: Pentax, F: Fujinon, and others)

- If it is not compatible, please call the seller for service.

5. Test methods

▶ **There are three modes such as RFID A, RFID B, and normal mode, and the**

mode can be selected at the checking option on the setting screen.

(See the article of 7–3. How to select the test mode)

※ When leaks are found, the location of leak should be checked in water tank after rechecking.

5–1. <RFID A> mode

▶ **It is a method to test with both <Scope tag> and <Tester tag>.**

| Main screen | Test screen |

5–1–1. Test method by using both <Scope tag> and <Tester tag>

① **Touch the <Scope tag> to the RFID reader on the side of the leak tester.**

  - If the reading is successful, it generates a feep sound.

  - Information of the touched tag is displayed on the screen.

② **Touch the <Tester tag> to the RFID reader on the side of the tester.**

  - If the reading is successful, it generates a feep sound.

  - Information of the touched tag is displayed on the screen.

※ If the reading fails, it means that the tag has no registered information. Hence, you must register it.
   (See : 7–5. Registration and management of tags)

※ The <Scope tag> and <Tester tag> that have already been registered in other leak testers are
   automatically registered while reading, without any other registration process.

(Test)

③ **When the leak tester recognizes both the <Scope tag> and <Tester tag>, it moves automatically to the test screen, then starts to test.**

④ **Once test starts, rotate the handle according to the indication of the screen.**

  ※ If you want to stop the test while putting pressure, touch the <mark>auto</mark> button, then it will stop putting
     pressure, exhausting the internal air automatically.

(Completion of the test)

⑤ **When the test is completed, test results will be displayed and related information will be saved on the internal memory, while the internal air is automatically exhausted.**

  (The test date / management number of the tester / model and management number of the scope /
   testers' management number / test results / measured value of leak / the number of test times
   depending on the type of scope, etc)

(Recheck)

▶ **If the value of resultant leaks is between <Leak Level> and <Recheck> level, it tests automatically one more time, then displays the result.**
  Please refer to the <Scope Option/Manager Mode> for <Leak Level> and <Recheck> level. (See: 7-7)

  <ex. If the level of leaks is (-3), and the level of repressured leaks is (-5), it tests automatically one more time
       when the resultant value is between -3 and -5 mmHg.>

  ※ When <Leak Level> is larger than the <Recheck> level, <Recheck> function does not operate.

5–1–2. Test method by using tags on the <Test screen> state

▶ **Repeat the process, from ① to ⑤, of the article of 5–1–1.**

5–1–3. Test methods by using <Auto> button

(Selecting the type of the scope)

▶ **Among the icons of the scope such as** **, touch the icon button to test.**

- It will be switched to <Test Screen>.

(Test)

▶ **On the <Test screen>, touch the auto button.**

- It starts to test. (See the article of 5–1–1.)

※ The results obtained by the auto button is not saved on the internal memory.

5–1–4. Manual test by using the manual button

※ This method is used to check the location of leak in water tank.

(Test)

▶ **On the <Test screen>, touch the manual button.**

- It automatically starts to put pressure.

※ The level of putting pressure can be controlled on the configuration.

- If you want to stop putting pressure, touch the manual button, then it will stop putting pressure, exhausting the internal air automatically.

- When it stops putting pressure, check the place where the bubbles are created.

(Completion of the test)

▶ **When the test is completed, stop the operation by touching the manual button.**

▶ **When the operation is completed, the internal air is automatically exhausted.**

5–2. <RFID B> mode

▶ **It is a way of using only the <Scope tag>.**

Main screen
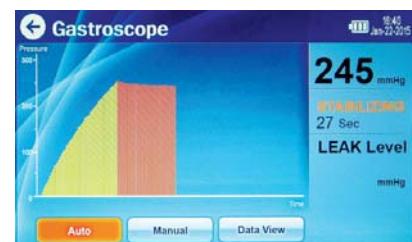
Test screen

5–2–1. Test methods by using only the <Scope tag>

(Inputting tags)

① **Touch the <Scope tag> to the RFID reader on the side of the tester.**

- If the reading is successful, it generates a feep sound.

- Information of the touched tag is displayed on the screen.

※ If the reading fails, it means that the tag has no registered information. Hence, you must register it.

※ The <Scope tag> that has already been registered in other leak testers are automatically

registered while reading, without any other registration process.

(Test)

② **When the leak tester recognizes the <Scope tag>, it moves automatically to the test screen, then starts to test. (The tester is displayed as a guest.)**

③ **If you want to stop the test while putting pressure, touch the <mark>auto</mark> button, then it will stop putting pressure, exhausting the internal air automatically.**

④ **Once test starts, rotate the handle according to the indication of the screen.**

(Completion of the test)

⑤ **When the test is completed, test results and related information will be saved on the internal memory, while the internal air is automatically exhausted.**

{The test date / management number of the tester / model and management number of the scope / testers' management number (being displayed as a guest) / test results / measured value of leak / the number of test times depending on the type of scope. etc.}

(Recheck)

▶ **If the value of resultant leaks is between <Leak Level> and <Recheck> level, it tests automatically one more time, then displays the result.**
Please refer to the <Scope Option/Manager Mode> for <Leak Level> and <Recheck> level. (See: 7-7)

※ When <Leak Level> is larger than the <Recheck> level, <Recheck> function does not operate.

5–2–2. Test method by using tags on the <Test screen> state

▶ **Repeat the process, from ① to ④ , of the article of 5–2–1.**

5–2–3. Test method by using <Auto> button

▶ **The test method is the same as the article of 5–1–3.**

5–2–4. Manual test by using the <mark>manual</mark> button

▶ **The test method is the same as the article of 5–1–4.**

5–3. <Normal> mode

▶ **This test method is to test the endoscope without the <Scope tag>.**

5–3–1. Test methods by using the <mark>auto</mark> button

▶ **The test method is the same as the article of 5–1–3.**

5–3–2. Manual test by using the <mark>manual</mark> button.

▶ **The test method is the same as the article of 5–1–4.**

> **< Message window>**
> ▶ **Error messages or test results are displayed in the message window.**
> ▶ **After checking the messages in the message window, please touch the**
> **message window to remove it and reactivate the working screen.**
> **(When the message window exists, all of the buttons stop working)**

6. Data View

Test screen

Data View screen

▶ **After touching the <Message window> on the test screen, touch the** data view **button.**

- It displays the screen of the data view.

- The screen displays today's test results.

▶ **Using the drop down scope selection button** Gastro **, select the scope that you**
want to search. (Gastro, Colono, Broncho, ERCP/US, All)

- It displays the test data for the type of the selected endoscope.

▶ **Return to the <Test screen> using the** ⬅ **button.**

▶ **To delete the data and copy them on the SD card, see <7–6 Data management>.**

7. Configuration (Setting)

Main screen

Setting screen

▶ **On the main screen, touch the** ⚙ **button.**

- It moves to the <Setting screen>.

7–1. How to set Date & Time Date & Time

▶ **Click the** — + **buttons of the month, date, year, day of the week, hour, and minute.**

- The setting values are decreased / increased.

7–2. How to set <Auto Power Off> time Auto Power Off

7–2–1. How to set the time when using the internal battery

▶ **Click the** 15 m **button.**

   - In the case of using the internal battery only, when not in use,

     the leak tester automatically turns off after 15 minutes.

▶ **Click the** 30 m **button.**

   - In the case of using the internal battery only, when not in use,

     the leak tester automatically turns off after 30 minutes.

7–2–2. How to set the time when using the power adapter

▶ **Click the** 1 h **button.**

   - In the case of using a power adapter, when it is not in use,

     the leak tester automatically turns off after 1 hour.

▶ **Click the** 2 h **button**.

   - In the case of using a power adapter, when it is not in use,

     the leak tester automatically turns off after 2 hours.

7–3. How to select the test mode Checking Option

7–3–1. How to select RFID A **mode**

▶ **It is a method to test leaks by using both <Scope tag> and <Tester tag>.**

   - It will save the data of the test.

   - According to the process of **5–1**, perform a test.

7–3–2. How to select RFID B **mode**

▶ **It is a method of using only the <Scope tag>.**

   - It will save the data of the test.

   - According to the process of **5–2**, perform a test.

7–3–3. How to select Normal **mode**

▶ **It is a method to test leaks without the <Scope tag>**.

   - It will not save the data.

   - According to the process of **5–3**, perform a test.

7–4. Setting the speaker Audio Setting

▶ **Using the** ON OFF **buttons, change the function of the speaker to ON/OFF.**

▶ **Using the** — + **buttons, control the volume of the audio system.**

7–5. Registration and management of tags Reg / Modify

▶ **It manages the data information of the <Scope tag> and <Tester tag>.**

- Input the information of hospital.

- Register and modify the <Tester tag>

- Register and modify the <Scope tag>

7–5–1. How to register and modify the name of hospital, department, and management number

Setting screen

Inputting password

Medical registration

Keyboard screen

{ Inputting the <password }

① **Touch the RFID Reg button on the <Setting screen>.**

② **When it generates input box, touch the OK button after entering the password of four digits.**

   ※ Default password is 0000.

   Please change password to manage the data. (See : 7-8)

③ **If the password is confirmed, it moves to the <Medical registration> screen.**

{ Inputting the Medical Center }

④ **Touch the Reg/Mod button of the <Medical Center>, then it moves to the <Keyboard screen>.**

⑤ **Enter the name of the hospital, up to 16 characters including letter and number.**

⑥ **After entering it, touch the OK or Enter button.**

{ Inputting the Department }

⑦ **Touch the Reg/Mod button of the <Department>, then it moves to the <Keyboard screen>.**

⑧ **Enter the name of the department, up to 16 characters including letter and number.**

⑨ **After entering it, touch the OK or Enter button.**

{ Inputting the Device ID }

⑩ **Touch the Reg/Mod button of the <Device ID>, then it moves to the <Keyboard screen>.**

⑪ **Enter the name of the Device ID, up to 4 characters including letter and number, which is not to duplicate the ID of other devices.**

※ If the management number is duplicated, the tester can not be discriminated from the leak data.

⑫ **After entering it, touch the** OK **or** Enter **button.**

⑬ **Touch the** → **button, and move to the next step.**

　※ If there are no names of hospital, department, and device ID, it will not proceed to the next step.

7‒5‒2. How to register the <Tester tag>

Tester Tag registration screen　　　　　　　　Keyboard screen

{ Selecting Tester tag registration }

① **Touch the <**Tester Reg**> tab button.**

　- The screen will display the latest tester tag data among the

　　registered information saved on the internal memory.

{ Inputting the Tester ID }

② **Touch the <**Tag Registration**> button.**

③ **Input the Tester ID you want to register.**

　- Input the ID up to 13 characters including letter and numbers, which is not to duplicate.

　※ If the management number is duplicated, the tester can not be discriminated from the leak data.

{ Registration of tags }

④ **After completing entering it , touch the** OK **or** Enter **button.**

⑤ **When it displays the <Contact Tester Tag to the RFID Reader> window,**

　touch the <Tester tag> to the RFID reader on the side of the tester.

　※ If two tags are neighbored, errors may occur. Therefore, touch only one of them.

　- When the registration is completed, device ID and tester ID will be

　　saved on the RFID tag of the tester and the memory of the tester.

　- When the registration is completed, it generates a feep sound.

　- If failed, it generates two feep sounds (feep feep).

7–5–3. How to modify the <Tester tag>

Tester Tag modification screen

Keyboard screen

{ Select Tester tag modification }

▶ **Touch the <Tester Mod> tab button.**

   - The screen will display the latest tester tag data among the
     registered information saved on the internal memory.

{ Reading Tags }

① **Touch the Tag Registration button.**

② **When it displays the <Contact Tester Tag to the RFID Reader> window, touch the tag for the tester that you want to change to the RFID reader on the side of the tester.**

   ※ If two tags are neighbored, errors may occur. Therefore, touch only one of them.

   - If the reading is successful, it generates a feep sound.

   - Information of the touched tag is displayed on the indicator of the tester ID.

{ Change of the tester ID }

③ **Change the tester ID that is not the same as other IDs, up to 13 characters including letter and number.**

   ※ If the management number is duplicated, the tester can not be
     discriminated from the leak data.

{ Registration of tags }

④ **When you complete changing it, touch the OK or Enter button.**

⑤ **When it displays the <Contact Tester Tag to the RFID Reader> window, touch the tag for the tester that you want to register to the RFID reader on the side of the tester.**

   ※ If two tags are neighbored, errors may occur. Therefore, touch only one of them.

   - When you complete the registration, changed device ID and scope ID
     will be saved on the RFID tags for tester and the memory of tester.

   - When the registration is completed, it generates a feep sound.

   - If the registration is failed, it generates two feep sounds (feep feep).

7–5–4. How to register the <Scope tag>

Scope Tag registration screen

Keyboard screen

{ Selecting Scope tag registration }

① **Touch the <Scope Reg> tab button.**

  - The screen will display the latest tester tag data among the

    registered information saved on the internal memory.

{ Selecting the type of scopes }

② **Using the drop down scope selection button** Gastro ▼ **, select the scope that you want to search**.

{ Inputting the scope ID }

③ **Touch the Tag Registration button.**

④ **Enter the scope ID to register.**

  - Enter the scope ID that is not the same as other ID, up to 13 characters including letter and number.

※ If the scope ID is duplicated, the scope can not be discriminated from the leak data**.**

{ Registration of tags }

⑤ **Touch the OK or Enter button.**

⑥ **When it displays the <Contact Scope Tag to the RFID reader> window, touch the tag**

   for the scope to register to the RFID reader on the side of the tester.

※ If two tags are neighbored, errors may occur. Therefore, touch only one of them.

  - When you complete the registration, changed device ID and scope ID

    will be saved on the RFID tags for the scope and the memory of tester.

  - When the registration is completed, it generates a feep sound.

  - If the registration is failed, it generates two feep sounds (feep feep).

7–5–5. How to modify the <Scope tag>

Scope Tag modification screen

Keyboard screen

{ Select Scope tag modification }

① **Touch the <Scope Mod> tab button.**

  - The screen will display the latest tester tag data among the

    registered information saved on the internal memory.

{ Reading tags }

② **Touch the Tag Registration button.**

③ **When it displays the <Contact Scope Tag to the RFID Reader> window,**

    touch the tag for the scope to register to the RFID reader on the side of the tester.

※ If two tags are neighbored, errors may occur. Therefore, touch only one of them.

  - If the reading is successful, it generates a feep sound.

  - Information of the touched tag is displayed on the indicator of the scope ID.

{ Change of the scope ID }

④   **Enter the scope ID that is not the same as other IDs, up to 13**

     characters including letter and number.

※ If the scope ID is duplicated, the scope can not be discriminated from the leak data.

{ Registration of tags }

⑤   **When the change is completed, touch the OK or Enter button.**

⑥   **When it displays the <Contact Scope Tag to the RFID Reader> window,**

     touch the tag for the scope to register to the RFID reader on the side of the tester.

  - When you complete the registration, changed device ID and scope ID

    will be saved on the RFID tags for the scope and the memory of tester.

  - When the registration is completed, it generates a feep sound.

  - If the registration is failed, it generates two feep sounds (feep feep).

7–5–6. How to delete the registered tag data

RFID Tag registration screen

▶ **Touch the tab button to delete.(Scope Reg, Scope Mod, Tester Reg, Tester Mod)**

▶ **Select the contents to delete by touching the line.**

  - If you want to select all, touch the All Select button.

▶ **Touch the Delete button.**

- Touch the <OK> button, when it displays a confirmation window for data deletion.

7‑5‑7. How to copy the registered tag data on SD card

RFID Tag registration screen

▶ **Select the contents to copy by touching the line.**

- If you want to select all, touch the All Select button.

▶ **Touch the Save SD Card button.**

- A message after saving will be displayed – Successfully saved data in SD card.

- The saved data can be found at the "Notepad" or "Excel" in the computer.

   File Name : Tag.txt   Type : Text   Data Format : See the example

{ Example of Tag.txt }

[Head]

Ver= V1.04

Model = ELT-2000

Medical Center = MedCen

Department = Dep

Equipment ID = EqIP

[Tester Tag Registration]

Reg.Data	Tester_ID	Used_Count
Aug-24-2014	EqIP-P-1234567890abc	99999

[Scope Tag Registration]

Reg.Data	Scope_ID	Tested_Count
Aug-24-2014	EqIP-G-1234567890abc	99999

※ Data format can be changed for the quality improvement without notice.

   (Refer to the DIABELL homepage : www.diabell.com)

7–6. Data management

Setting screen

Data Management screen

Inputting password screen

Manager Mode screen

7–6–1. Searching test data in the <Data Management>

① **Touch the Data Management button on the setting screen.**

- Move to the screen of data management.

- The screen displays today's test results among the data that were saved on the internal memory.

② **Using the drop down scope selection button** ⬚Gastro▼⬚**, select the scope that you want to search.(Gastro, Colono, Broncho, ERCP/US, All)**

③ **Touch** ⬚📷⬚ **button to select the month you want to search**.

- It displays the found data on the screen.

※ Caution : Searching is only possible within selected one month.

7–6–2. Deleting test data in the manager mode

① **Touch the Manager Mode button on the screen of data management.**

② **When it displays the input box window for password, enter 4 digits password and touch OK button.**

- If the password is correct, it moves to the <Manager Mode>.

- If the password is incorrect, enter it again.

{ Scope type selection }

③ **Using the drop down scope selection button** ⬚Gastro▼⬚**, select the scope that you want to search.**

{ Period selection }

④ **Select the period to search the data by touching the** ⬚📷⬚ **buttons.**

- The screen displays the test data saved during the selected period.

{ Data selection }

⑤ **Select the contents to delete by touching the line.**

- If you want to select the whole data of the screen, touch the <mark>All Select</mark> button.

{ Deletion }

⑥ **If you want to delete data, touch the <mark>Delete</mark> button.**

- Touch the <mark>OK</mark> button, when it displays a confirmation window for data deletion.

7‒6‒3. Copy of searched test data from the internal memory to the SD card

▶ **Using the drop down scope selection button <mark>Gastro ▼</mark> , select the scope**

that you want to copy.

▶ **Select the period to search the data by touching the 🔲 buttons.**

▶ **Touch the <mark>Save SD Card</mark> button.**

- Copy the searched test data on the SD card

※ Caution : Saving or searching is only possible within one month.

7‒6‒4. Copy of all test data of the selected month from the internal memory to the SD card

▶ **Select the month you want to copy by touching the 🔲 button.**

▶ **Touch <All Select> button.**

- The whole data of the selected month will be selected.
  (Gastroscope, Colonoscope, Bronchoscope, ERCP/US)

▶ **Touch the <mark>Save SD Card</mark> button.**

- Copy selected test data on the SD card.

7‒6‒5. Automatic copy of the data over 12 months on SD card

- The test data which pass over 12 months in the internal memory will be automatically
   copied on the SD card and at the same time, removed from the internal memory.

7‒6‒6. Copy of the test data of SD card to the computer

- Eject the SD card from the Leak Tester, and insert it to the SD card reader.

- Insert the card reader into the USB port of the computer.

- Copy the data file of SD card to the data folder of the computer.

- Check the copied test data file by using the <Text editor>(Notepad, MS Excel etc.).

- The file name and type of test data are as follows.

File Name : YYYYMMDD.TXT or YYYYMM.TXT

(YYYY : Year, MM : Month, DD : Day)

Type : TXT (Plain text file)   Data Format : Refer to example

7-6-7. Checking the test data in the <Mac OS X>

- Open the saved test data by using the text editor.

(Refer to Mac Office or TextWrangler)

7-6-8 . Checking the test data in the <MS windows>

▶ **Checking test data in the <Notepad> : Example**

- Check the test data by double clicking the copied data file, or open the

<Plain Text.TXT> by using the text editor.

{ Example of YYYYMMDD.TXT }

[Head]

Ver = 1.04	Model = ELT-2000
Medical Center = MedCen	Department = Dep
Device ID = 12	

[Data]

Reg. Date	Scope Type	Scope ID	Tester ID	Result	Leakage	Tested Count
Oct-21-2014 16:05	GastroScope	12-G-32	12-P-432	PASS	-0.7	11
Oct-22-2014 11:47	GastroScope	12-G-002	12-P-003	PASS	-0.7	3
Oct-22-2014 11:49	GastroScope	12-G-002	12-P-003	PASS	-0.4	4
Oct-22-2014 11:50	GastroScope	12-G-002	12-P-003	LEAK	-22.6	5
Oct-24-2014 12:52	GastroScope	12-G-002	12-P-003	ERR-01		9

[End]

※ Data format can be changed for the quality improvement without notice.
(Refer to the DIABELL homepage : www.diabell.com)

{ Review with the MS Excel : Example }

1.Run the 'open file' of the MS Excel.
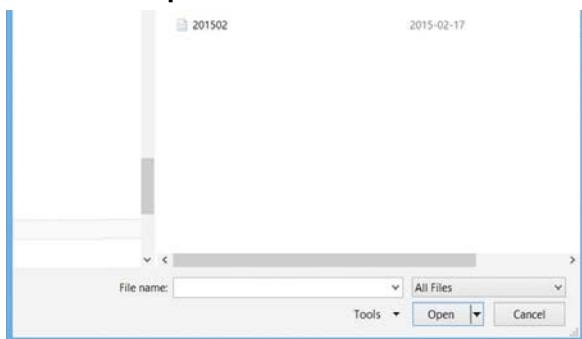
2. Select the data file
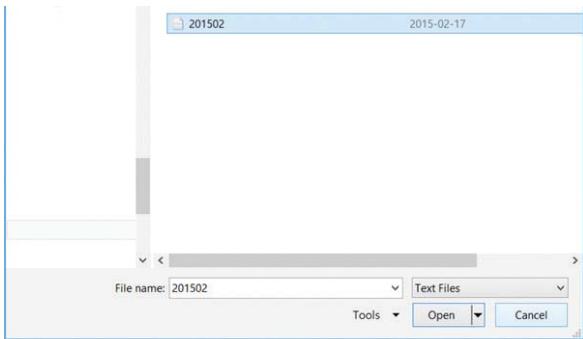
① Select the type of text file.

② Select the flash disk (SD card).

③ Select the data file.

④ Click the 'open' button.

3. 1st step to open

- Select the "Delimited" and click the "Next" button.
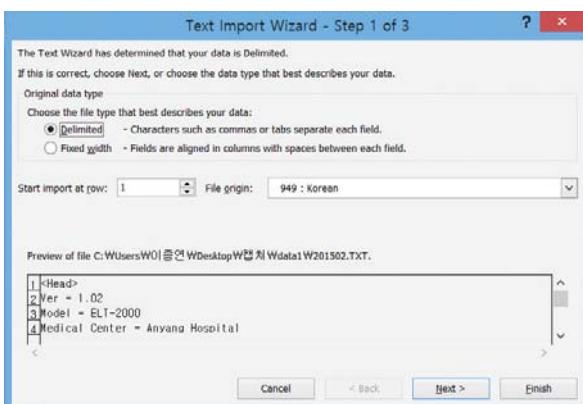
4. 2nd step to open

- Select the "Tab (T)" and click the "Next" button.
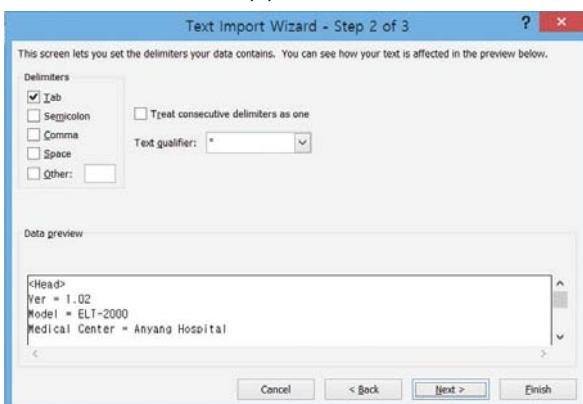
5. 3rd step to open

- Select the "General" and click the "Finish" button.
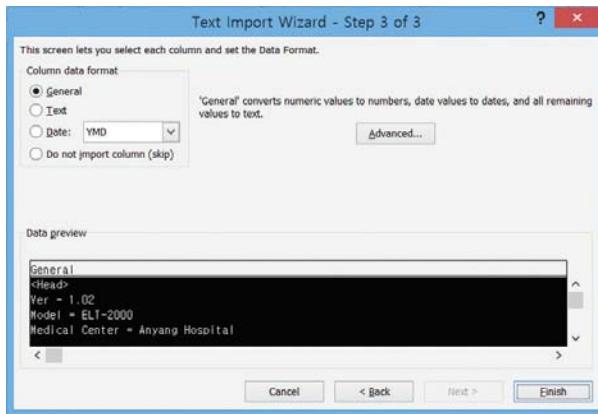
6. Viewing data

- View the converted data from the <Data Management> of the tester.

※ Caution : When data file is opened by MS Excel, the data could not be

displayed correctly if such process is not carried out as suggested above.
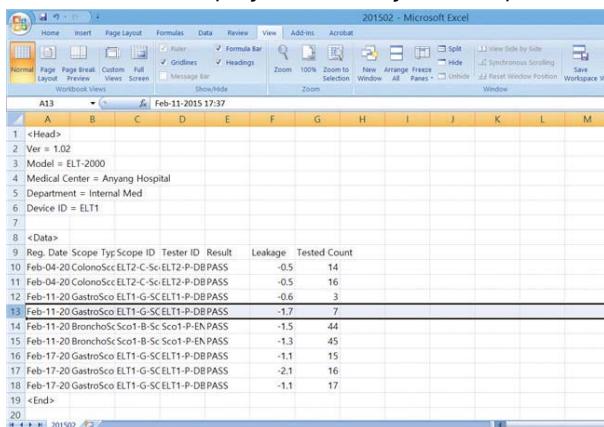
7–7. Scope options

▶ **In order to test leaks, set the stabilizing time, checking time,**

leak level, and maximum pressure by the type of endoscope.

Setting screen

Scope option screen

Password screen

Manager Mode screen

▶ **Touch the Scope Option button.** - It will display the screen of scope option.

▶ **Touch the Manager Mode button.**

▶ **Enter 4 digits password and touch the OK button.**

  - If the password is correct, it moves to the <Manager mode screen>.

  - If the password is incorrect, enter it again.

▶**Set the scope type, stabilizing time, checking time, leak level, and**

  maximum pressure using ▢▢▢▢ **buttons.**

▶ **Set the <Manual Max Pressure>, <Recheck>, and <Manual Repressure>, using** ▢▢▢▢ **buttons.**

※ When <Leak Level> is larger than the <Recheck> level, <Recheck> function does not operate.

7–8. Setting and changing the password

Setting screen   Password screen

① **Move to next page of the configuration using** ▢ **button.**

② **Touch the Reg/Modify button.**

③ **Enter current password when the window to enter password is appeared.**

  ※ Default password is 0000.

④ **Touch OK button after entering a new password.**

  ※ Remember new password because it appears only one time on the star marked buttons.

  ※ In order to confirm the new password, you can check it by going back to the <Scope Option>
      in the initial <Setting screen>.

7–9. Setting the brightness of the LCD

Setting screen

①┌ **Move to next page of the configuration using** ▢ **button.**

②┌ **Control the brightness of the LCD using** ▢▢▢▢ **buttons.**

8. Upgrading firmware (Homepage: www.diabell.com)

▶ **Please progress following upgrade procedures after downloading and unzipping the version up file from the DIABELL homepage.**

1. Copy SPHOST.BRN on SD card.

2. Insert the SD card to the tester and turn it on.

3. The upgrade is automatically done when the screen is turned on, and when it is finished, the power will be turned off automatically.

4. Turn on the power again, you can find a revision number, <FW Rev. XXX> in the <System Info> by clicking the arrow button on the <Setting screen>.

5. Proceed the test after returning to the main page.

9. Cleaning and storage

▶ **Please keep the main body clean.**

▶ **Please clean contaminants on main body with dry cloth.**

▶ **If the level of contaminant is serious, clean it with a neutral detergent or water dipped cloth. And then rub it with dry cloth.**

- Be careful to prevent water from flowing inside of the tester.

(Caution)

▶ **Do not use alcohol, benzene or thinner when removing contaminants.**

(Caution for storage)

▶ **Please do not store in following locations.**

- Nearby water contents

- Location that can be affected by air such as high temperature, moisture, dust, and salt.

- Places that have impact, vibration, and slope.

- The places that store chemicals or generate corrosive gas.

10. Troubleshooting

LCD display	Problems	Solutions
ERROR-1	Not reaching the max pressure	Check connection part of air tube.
ERROR-2	Much shorter time to reach the max pressure than the normal	Check connection between waterproof cap of the scope and coil hose connector.
ERROR-3	Inaccurate measurement of the pressure	Please contact the seller if the Error-3 appears after turning on the power repeatedly.
ERROR-4	Leak detection during the stabilization of air	Check the Air Way (It should be completely opened for leak test).
No more than one square of remained battery charging	Low charging capacity in internal battery	Please use the adapter.
No signal after turning on power	Complete discharge of Internal battery	Please operate tester after connecting adapter for about 30 min. If the problem still exists, request After Sale Service.
No change on display during operation	No change on display	Push RESET switch on the backside, using a tool. If the problem still exists, have it inspected.

11. Product specification

ITEM		CONTENTS
Name of product		ENDOSCOPE AUTO LEAK TESTER
Model		ELT-2000BT
Display		Digital graphic, 7" color TFT LCD
Method of measurement		Pressure sensor type
Display range of pressure		5~300 mmHg
Measurement range of the leak		0~ -99.9 mmHg
Storing capacity of test data		Data capacity for 12months, Maximum 5,000 per month
Pressure setting		Max pressure setting type
Exhausting		Automatic fast exhausting method
Temperature and humidity in usage environment		+10~+50℃, 15~85%RH
Temperature and humidity in storage environment		-20~+60℃, 10~90%RH
Power supply		Proprietary Adapter : 100-240VAC 50/60Hz AC-DC Adapter : DC5V 2,000mA
RFID	**Range of frequency**	13.5603 MHz
	Modulation system	ASK
	The number of channel	1 channel
	Form of radio wave	A1D
	Output	<47.544mV/m at distance of 10 meter
Weight		920 g
Outer dimension (W × H × D)		223 x 90 x 160 (mm)
Components		Leak Tester unit, Adapter, SD card, RFID tag, coil hose, SD card reader, Printer set, Instruction manual (including Quality Assurance)

Certificate Mark

* Name of equipment (Model name) : Wireless machine for RFID/USN (13.56 MHz range) (ELT-2000BT)
* Confirmation number :
* Certificated company name : DIABELL Co., Ltd.
* Producer / production nation : ORACOM / Republic of Korea
* Generally speaking, this equipment is not allowed to operate within 20 cm from the human body, thus it is considered as a no SAR tool and the SAR test is not performed.
* This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions :
    (1) This device may not cause harmful interference, and
    (2) This device must accept any interference received, including interference that may cause undesired operation.
* Caution : Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.
* This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter.
* A minimum separation distance of 20 cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

Instruction Manual for Bluetooth Printer (ELT-2000BT)

1-┌. Printing method

1-1. How to connect Bluetooth Printer to the ELT-2000BT

- **Turn the Bluetooth Printer and the Leak Tester (ELT-2000BT) power on.**

- **Contact the Bluetooth Printer's RFID Tag to the RFID Reader of ELT-2000BT**

- **When the connection is correct, a Printer Icon will be displayed on the top**

  screen.

1-2. How to test leaks

- **Test leaks according to the instruction manual of Leak Tester (ELT-2000BT).**

  (The maximum wireless distance between the 2 devices is 5 to 6 meters)

1-3. How to print the test results

- **After finishing a leak test, the test results will be automatically printed out.**


```
Model : ELT-2000BT
Device ID : 1
============================
Date : Nov-06-2014 12:07
Scope ID : 1-G-2307649
Scope Type : GastroScope
Tester ID : 1-P-6
Result : PASS
Leakage : -1.1
Test Time : 45 sec
****************************
```

Quality Assurance

1. Quality assurance

- The period of repair without charge is within one year after purchase, on the condition that the product is used normally, following the instruction manual.
- After the period of free repairing, repair will be charged.
- Problems occurred by user's mistakes will be charged for repair.

2. Repair without charge

Types of consumer's damages	Repairing contents
· When problems are occurred within 10 days of normal use after purchase.	Refund / Exchange
· When problems are occurred within one month of normal use after purchase.	Exchange / Free repairing
· When problems are occurred within one year of normal use after purchase.	Free repairing

3. Repairing at a cost

Types of consumer's damages	Repairing contents
Even in the period of repair without charge, if the damages come from the following reasons, repair will be charged. - Fire, Earthquake, Flood, Thunderbolt, Natural disaster, Environmental pollution - Abnormal power supply, not the proprietary one (Voltage, Frequency) - The cause of disorder is not related to this product.	Repairing at a cost
The problems in operation are made by user's mistake or unreasonable repairing and remodeling.	Repairing at a cost
Please read instruction manual carefully because expense will be charged if you request service to product in no trouble.	Charging expense

Product warranty

Name of product	ENDOSCOPE AUTO LEAK TESTER
Model Name	ELT-2000BT
Number of product	
Date of purchase	
Seller (Name of Agent)	
Period of warranty	1 year
Name of customer	
Contact information of customer	

FCC Information to User

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is con-nected.

• Consult the dealer or an experienced radio/TV technician for help.

Caution

Modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Compliance Information : This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

IMPORTANT NOTE:

FCC RF Radiation Exposure Statement:

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

The antennas used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

CAUTION

To reduce the risk of electric shock, do not remove the top cover (or the rear section).
No user serviceable parts inside, refer servicing to qualified personnel.

⚠ This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure-voltage that may be sufficient to constitute a risk of sock.

⚠ This symbol, wherever it appears, alerts you to the important operating and maintenance instructions in the accompanying literature. Please read the manual.

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Do not use this equipment near water.

6) Do not using near any heat sources such as radiators, heat resisters, stove, or other equipment that produce heat.

CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

European CE notice to users and product statements

This product is CE marked according to the provisions of the R&TTE Directive(1999/5/EC). Hereby, DIABELL COMPANY LIMITED declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

For further information, please contact   http:// www.diabell.co.kr

---

CE1177

DIABELL COMPANY LIMITED
105, Anyangcheonseo-ro, Manan-gu, Anyang-si, Gyeonggi-do, South Korea
Tel: +82-31-380-4352
Fax: +82-31-380-4360
URL: www.diabell.co.kr

CONTACT INFORMATION

Manufacturer Address   105, Anyangcheonseo-ro, Manan-gu, Anyang-si, Gyeonggi-do, South Korea

To locate in-country DIABELL COMPANY LIMITED, distributors of the ENDOSCOPE AUTO LEAK TESTER

please refer to the DIABELL COMPANY LIMITED Website http:// www.diabell.co.kr

These distributor(s) represent local contacts for this product.

CORPORATE HEADQUARTERS:

MAYTEL CO., LTD.

105, Anyangcheonseo-ro, Manan-gu, Anyang-si, Gyeonggi-do, South Korea

Tel: +82-31-380-4352

Fax: +82-31-380-4360

Web: http:// www.diabell.co.kr

This   device complies with Industry Canada license-exempt RSS standard(s).

Operation is Subject to the following two condition: (1) this device may not cause interference

,and (2) this device must accept any interference, including interference that may cause undesired

operation of the device.

EUROPEAN UNION "DECLARATION OF CONFORMITY"

DECLARATION OF CONFORMITY

DIABELL COMPANY LIMITED

105, Anyangcheonseo-ro, Manan-gu, Anyang-si, Gyeonggi-do, South Korea

declare under our sole responsibility that the product(s)

ENDOSCOPE AUTO LEAK TESTER – ELT-2000BT

to which this declaration relate(s) is in conformance with the following standards:

EN 301 489-1 V1.9.2:2011
EN 301 489-3 V1.6.1 :2013
EN 301 489-17 V2.2.1:2012
EN 60950-1:2006/A2:2013
EN 300 328 V1.9.1:2015
EN 300 330-1 V1.8.1:2015
EN 300 330-2 V1.6.1:2014

following the provisions of the 1999/5/EC Directives.

DIABELL   Logo

www.diabell.com