# ADC® Adscope™ 658 Electronic Stethoscope

Instructions for Use

AMERICAN DIAGNOSTIC CORPORATION

# ADC® Adscope™ 658 Electronic Stethoscope

Thank you for choosing the ADC® Adscope™ 658 Electronic Stethoscope.
We're proud of the care and quality that goes into the manufacture of each and every item that bears our name. Only the finest materials are used to assure you of a timeless instrument designed for optimum performance.

You'll quickly appreciate the results, for you now own one of the finest electronic stethoscopes that money can buy. With proper care and maintenance, your ADC® Adscope™ 658 Electronic Stethoscope is sure to provide you with many years of dependable service. Please read the following instructions and general information which will prove helpful in allowing you to enjoy your ADC® product.

## Device Description and Intended Use

The Adscope™ 658 Electronic Stethoscope is intended for medical diagnostic purposes only. It can be used for the amplification of heart, lung, and other body sounds. Frequency selection and volume buttons enable operator control. The 658 can be used on patients of any age undergoing a physical assessment. This device is designed for use in a professional setting by a healthcare practitioner.

## Symbol Definitions

| Symbol | Definition |
|---|---|
|  | Important Warning/Caution |
|  | Not made with natural rubber latex |
|  | Equipment type is BF |

| Symbol | Definition |
|---|---|
|  | Low Power Indication |
|  | Manufacturer's Information |
| SN | Serial Number |

## General Warnings ⚠

A warning statement in this manual identifies a condition or practice which, if not corrected or discontinued immediately, could lead to patient injury, illness, or death.

- Do not tap hard or scratch diaphragm of the chestpiece while wearing the eartips with the stethoscope powered on.
- Do not bend or apply excessive force to the stethoscope.
- Do not disassemble, repair, or modify the device. When repair is needed, contact the ADC® Customer Service Dept., (see reverse side).
- Avoid any place of high humidity or wet conditions such as a bathroom. Pressing the Power button while the stethoscope is wet could cause irreparable damage to the device.
- Do not immerse in water. This product is not water resistant, avoid excessive moisture.
- Check the battery level before use (central 'D' LED : flashing in red). The sounds might be distorted if the battery level is low.
- This product is intended for use by a medically trained specialist.
- This product may contain a chemical known to the state of California to cause cancer, birth defects, or other reproductive harm.
- Fully charge battery before first use.
- This scope can not be used while being charged.
- Incorrect replacement of lithium batteries will result in an unacceptable risk.
- Replacement of lithium batteries by untrained personnel can result in a hazard.

- Do not dispose of in municipal waste. Waste batteries may be returned to ADC's service center at: 55 Commerce Drive, Hauppauge NY 11788 or you may contact your local EPA office for guidance on the proper disposal of lithium ion batteries.

**Caution**: ⚠

- Avoid direct exposure to sunlight, heating fans, or heating appliances.
- Avoid strong magnetic fields beside the device. These could cause it to malfunction.
- Do not use the stethoscope for purposes other than the intended use.
- Federal law restricts this device to sale by or on the order of a physician or licensed healthcare practitioner.
- Always check security of the eartips before use.

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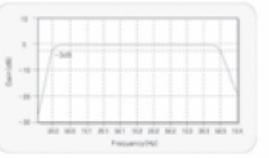
**ADC® Adscope™ 658 Electronic Stethoscope features:**

- Improves low frequency sound transmission characteristic with the use of a piezopolymer film contact microphone
- MPU controlled automatic power off
- Mode selection function (Bell, Diaphragm)
- 8 level digital volume control
- Holds last mode and volume setting



An acoustic microphone used in most electronic stethoscopes may have frequency characteristics not suitable for the body sounds, especially for the low frequency heart sounds. Other stethoscopes provide the internal body sounds not directly from the body surface, but through the air layer between the body surface and the microphone. The 658 solves these problems with the use of a piezopolymer film contact microphone which is the heart of the 658. The 658 has wide frequency characteristics and enables you to detect the heart and lung sounds more precisely.

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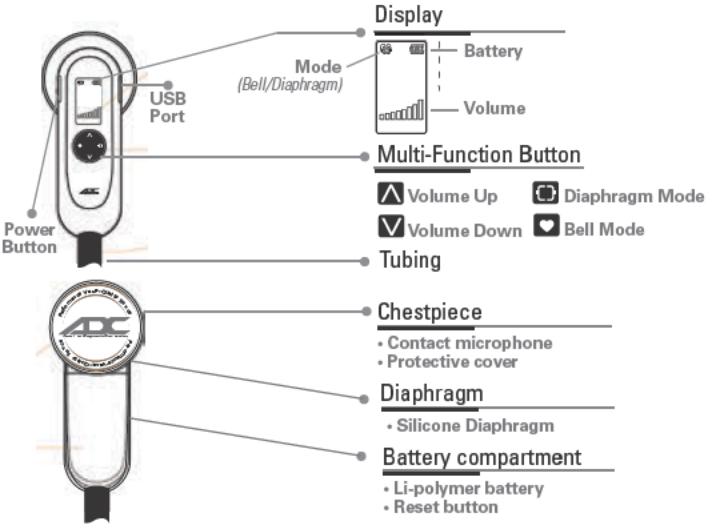
Name and Function of each part

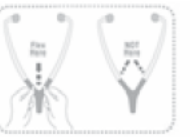


## Operation of the Headset

The ADC® Adscope™ 658 electronic stethoscope is designed to provide comfortable ear fittings and the best sound transmission. The binaurals (ear tubes) are angled at 15° to permit a comfortable, acoustically sealed aural fit. Eartips should point forward, towards the bridge of the nose to fit properly.

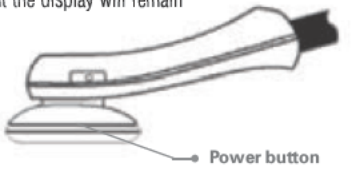

## Adjusting the Spring Tension in the Headset

To reduce the tension, grip the binaurals firmly using both hands with fingers at the center of the "Y" in the tubing, thumbs at each side where the tubing branches out. Flex binaurals gradually until the desired tension is obtained. To increase the tension, grip the binaurals in the hand and squeeze the binaural tubes together gradually. Excessive adjustment of the spring tension could weaken the spring.



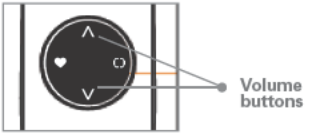
## Power ON/OFF

Press the Power button to turn the 658 on. The Multi-function button will turn blue, and the LCD will show the selected Mode and Volume. The backlight will stay on for fifteen seconds. The unit will remain on for up to three minutes, but the display will remain dark to conserve power - A quick press of any button will awaken the unit. Press the Power button for two seconds (or more) then release to manually power down the unit. The 658 turns off automatically three minutes after the last button is pressed.




## Volume Control

While auscultating, press the Volume button '∧ ' to increase the sound level, and press the Volume button '∨ ' to decrease the sound level. The volume is divided into eight levels.



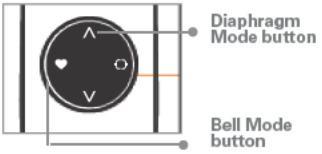

## Mode Selection

After the 658 powers on, pressing either the Bell or Diaphragm Mode button will change the mode.

- **B - Bell** *(Low Frequency 15-200Hz)*
- **D - Diaphragm** *(High Frequency 100-500Hz)*

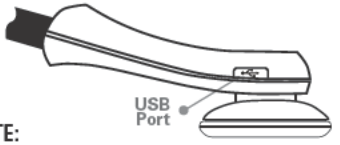
***Bell*** mode provides excellent detection of low & medium pitched heart sounds and murmurs.

***Diaphragm*** mode is designed for the detection of pulmonary sounds and high pitched murmurs, clicks, and ejection sounds.



## Battery Charging

When the battery signal on the LCD indicates low battery level, open the USB cover and connect the 658 via USB cable. The Multi-function button will change to red while in the charging mode. When charging is complete, the red Multi-function light will turn off.




**NOTE:**

- Fully charge before first use.
- The 658 scope cannot be used WHILE it is being charged.

Cell Model No: PR-632540N
Product Name:
Secondary ( Rechargeable ) 3.7V Li-ion
Battery 620mAh, 2.294Wh
TCL Hyperpower Batteries Inc
No.,3,Hechangdongliu Rd.
Huitai Industrial Zone,
Huicheng District, Huizhou,
Guangdong,P.R.China,516006

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## Replacing the Eartips

**To replace Adsoft™ Plus Eartips**: Slide Adsoft™ PLUS eartip over adapter until it locks tight into internal channel.
Repeat steps for second aural tube.

Eartips may be removed from binaurals for a thorough cleaning. Periodically check that eartips are tightly secured to binaurals.

⚠ **Caution** - Always check security of eartip before inserting in ears.

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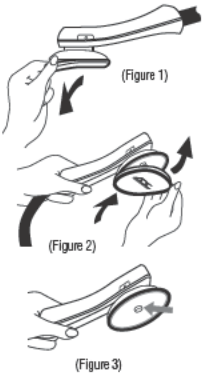
## Replacing the Diaphragm

Your 658 Electronic ADSCOPE™ chestpiece is equipped with an ultrasensitive Piezoelectric sound transducer, covered by a silicone diaphragm.

**To remove the Silicone Diaphragm:** Gently pull off one side of the diaphragm from the rim, and continue around edge until the diaphram comes completely off (figure 1).

**To replace the Silicone Diaphragm:**
Clip one edge of the new diaphragm on the chestpiece rim and gently stretch until entire diaphragm inserts fully in the track around the rim (figure 2).

**NOTE:** Do not touch Piezoelectric sound transducer located in the center of the chestpiece under the diaphragm, as it is extremely sensitive and could cause damage to it (figure 3).

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## Care and Maintenance

- Avoid extreme heat, cold, solvents, or oils.
- Do NOT leave exposed to direct sunlight for prolonged periods of time.
- The headset can be wiped down with alcohol or mild soapy water.
- Eartips may be removed from binaurals for a thorough cleaning.

- Periodically check that eartips are tightly secured to binaurals.
- Do NOT immerse stethoscope in any liquid or subject to steam sterilization.
- Chestpieces and diaphragms can be wiped down with 70% isopropyl alcohol for cleaning purposes.

It is unnecessary to disassemble the unit for cleaning. Use a slightly moistened cotton cloth with alcohol to clean chestpiece diaphragm, binaurals, and eartips. Be careful to prevent alcohol seepage under the diaphragm. It may cause significant damage to the microphone and electronic circuits.

**Caution** - Never immerse instrument in any liquid. Do not apply excessive force to the diaphragm. Your Adscope™ 658 electronic stethoscope has a replaceable diaphragm with a piezopolymer film contact microphone positioned behind it. The chestpiece is not user-serviceable and should never be disassembled, except to replace the diaphragm.

To order any replacement parts, contact our Customer Service department at **1-800-232-2670**.

## Troubleshooting Solutions

| Troubleshooting Possible Problems | |
|---|---|
| **Problem** | **Solution** |
| Battery will not charge | Check battery connection. If battery is properly connected and will not charge, battery must be replaced. Contact your local ADC dealer. |
| Poor sound quality, intermittent sound amplification, or no sound amplification | Contact your local ADC dealer for warranty service on your stethoscope. |
| Damaged/worn chestpiece diaphragm | Contact your local ADC dealer for warranty service on your stethoscope. |
| Low battery icon is displaying | Charge battery. If icon displays frequently despite regular charges contact your local ADC dealer for replacement battery. |

## Specifications

| ITEM | CONTENT | | |
|---|---|---|---|
| Sensor: | Piezoelectric sound transducer activated by polycarbonate diaphragm | | |
| Voltage: | 3.7v Li-polymer | | |
| Power Dissipation: | 0.115VA (3.7v * 31mA) | | |
| Filter Range: | Microphone | 5Hz - 5,000Hz | |
| | Filter Range | Bell Mode | 15Hz - 200Hz |
| | | Diaphragm Mode | 100Hz - 500Hz |
| Battery Life<br>Charging Time | 20 hours under continuous power on<br>70 minutes | | |
| Amplifier | Amplification range | 6dB - 18dB | |
| Control Volume | Control Volume | Digital volume (8 step), 3dB/step | |

Operating Environment

- Temperature: -4°F to 104°F (-20°C ~ 40°C)
- Humidity: 20 to 95% Relative humidity
- Atmospheric Pressure 101.325 kPa (760mmHg)

Storage Environment

- Temperature: -4°F to 122°F (-20°C ~ 50°C)
- Humidity: 20 to 95% Relative humidity

Regulatory Standards

EN 60601-1: 2005 + CORR. 1:2006 + CORR. 2:2007 + AM1:2012
EN 60601-1-2:2007+AC: 2010

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Guidance and Manufacturer's Declaration

**Warning:** Electrical medical equipment may require special precautions in relation to EMC and this device must be put into service in accordance with the EMC precautions provided further in these instructions for use.

**Warning:** Portable and mobile RF communications equipment can affect medical electrical equipment. Care should be taken when using this device near active RF equipment. Follow the guidelines outlined below for further information.

**Warning:** This equipment is supplied with a USB cable. When using an AC adapter to charge this device (not supplied), use only adapters with OUTPUT VOLTAGE: 5~9V、OUTPUT CURRENT: 1A~3A. Use of accessories or cables other than those specified above and the use of unapproved replacement components may result in increased emissions or decreased immunity of this device.

**Warning:** This device should not be used adjacent to or stacked with other equipment unless such use has been verified to function normally within the configuration in which it will be used.

**Warning:** Accessories and cables provided with this device have not been tested or verified for use with other medical electrical equipment and should not be considered interchangeable.

Guidance and manufacturer's declaration - electromagnetic emissions - for all MEDICAL ELECTRICAL EQUIPMENT and MEDICAL ELECTRICAL SYSTEMS

| Table 1:Guidance and manufacturer's declaration – electromagnetic emissions | | |
|---|---|---|
| The 658 is intended for use in the electromagnetic environment specified below. The customer or the user of the 658 should assure that it is used in such an environment. | | |
| Emissions test | Compliance | Electromagnetic environment - guidance |
| RF emissions CISPR 11 | Group 1 | The 658 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. |
| RF emissions CISPR 11 | Class B | The 658 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emissions IEC 61000-3-2 | A | |
| Voltage fluctuations/ Flicker emissions IEC 61000-3-3 | Complies | |

Guidance and manufacturer's declaration - electromagnetic immunity - for all MEDICAL ELECTRICAL EQUIPMENT and MEDICAL ELECTRICAL SYSTEMS

| Table 2: Guidance and manufacturer's declaration – electromagnetic immunity | | | |
|---|---|---|---|
| The 658 is intended for use in the electromagnetic environment specified below.<br>The customer or the user of the 658 should assure that it is used in such an environment. | | | |
| Immunity test | IEC 60601<br>Test level | Compliance<br>level | Electromagnetic environment<br>guidance |
| Electrostatic Discharge(ESD) IEC 61000-4-2 | ±8 kV contact<br>±2kV, ±4kV,<br>±8kV, ±15kV air | ±8 kV contact<br>±2kV, ±4kV,<br>±8kV, ±15kV air | Electromagnetic environment - guidance<br>Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%. |
| Electrical fast transient/burst IEC 61000-4-4 | ±2 kV for power supply lines | ±2 kV for power supply lines | Mains power quality should be that of a typical commercial or hospital environment<br>Mains power quality should be that of a typical commercial or hospital environment. |
| Surge IEC 61000-4-5 | ±0.5kV, ±1kV | ±0.5kV, ±1kV | Mains power quality should be that of a typical commercial or hospital environment. |
| Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11 | 0%UT<br>For 0,5 cycle<br><br>0%UT<br>1 cycle<br><br>70% UT<br>(30% dip in UT)<br>For 25 cycle<br><br>0%UT<br>For 5 cycle | 0%UT<br>For 0,5 cycle<br><br>0%UT<br>1 cycle<br><br>70% UT<br>(30% dip in UT)<br>For 25 cycle<br><br>0%UT<br>For 5 cycle | Mains power quality should be that of a typical commercial or hospital environment. If the user of 658 requires continued operation during power mains interruptions, it is recommended that the 658 be powered from an uninterruptible power supply or a battery. |
| Power frequency (50/60Hz) magnetic field IEC 61000-4-8 | 30A/m | 30A/m | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment |

Guidance and manufacturer's declaration – electromagnetic immunity for MEDICAL ELECTRICAL EQUIPMENT and MEDICAL ELECTRICAL SYSTEMS that are not LIFE-SUPPORTING.

| Table 3: Guidance and manufacturer's declaration – electromagnetic immunity | | | |
|---|---|---|---|
| The 658 is intended for use in the electromagnetic environment specified below.<br>The customer or the user of the 658 should assure that it is used in such an environment. | | | |
| Immunity test | IEC 60601 Test level | Compliance level | Electromagnetic environment guidance |
| Conducted RF IEC 61000-4-6 | 3V,<br>0.15MHz-80MHz<br>6V in ISM and amateur radio bands between 0.15MHz and 80MHz | 3V,<br>0.15MHz-80MHz<br>6V in ISM and amateur radio bands between 0.15MHz and 80MHz | Portable and mobile RF communications equipment should be used no closer to any part of the SYSTEM, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.<br>Recommended separation distance<br>$d = [\frac{3.5}{V_1}]\sqrt{P}$<br>$d = [\frac{3.5}{E_1}]\sqrt{P}$ 80MHz to 800MHz<br>$d = [\frac{7}{E_1}]\sqrt{P}$ 800MHz to 2.5GHz |
| Radiated RF IEC 61000-4-3 | 10V/m<br>80MHz-2.7GHz<br>80% AM at 1kHz | 10V/m<br>80MHz-2.7GHz<br>80% AM at 1kHz | Where ***P*** is the maximum output power rating of the transmitter in watts(W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).<br>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range.<br>Interference may occur in the vicinity of equipment marked with the following symbol:  |

WARNING: Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the 658, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

| Proximity fields from RF wireless communications equipment | | |
|---|---|---|
| Test frequency (MHz) | Band (MHz) | Immunity test levels<br>Professional healthcare facility environment |
| 385 | 380-390 | Pulse modulation 18Hz, 27V/m |
| 450 | 430-470 | FM, ±5kHz deviation, 1kHz sine, 28V/m |
| 710 | 704-787 | Pulse modulation 217Hz, 9V/m |
| 745 | | |
| 780 | | |
| 810 | 800-960 | Pulse modulation 18Hz, 28V/m |
| 870 | | |
| 930 | | |
| 1720 | 1700-1990 | Pulse modulation 217Hz, 28V/m |
| 1845 | | |
| 1970 | | |
| 2450 | 2400-2570 | Pulse modulation 217Hz, 28V/m |
| 5240 | 5100-5800 | Pulse modulation 217Hz, 9V/m |
| 5500 | | |
| 5785 | | |

## Warranty

American Diagnostic Corporation (ADC®) warrants its products against defects in materials and workmanship under normal use and service as follows:

1. Warranty service extends to the original purchaser from the date of purchase.
   **2 years** - Electronic Chestpiece
   **Lifetime** - Binaurals & Tubing
2. The entire stethoscope is warranted. This warranty is only valid if the product is registered online at **www.adctoday.com**.

**What is Covered:** Repair, or replacement of parts, and labor.

**What is not covered:** Transportation charges to ADC®. Damages caused by abuse, misuse, accident, or negligence. Incidental, special, or consequential damages. Batteries or damage from old batteries is not covered by the warranty. Some states do not allow the exclusion or limitation of incidental, special, or consequential damages, so this limitation may not apply to you.

**To Obtain Warranty Service:** Send item(s) postage paid to ADC®, Attn: Service Dept., 55 Commerce Dr., Hauppauge, NY 11788. Please include your name and address, daytime phone no., proof of purchase, and a brief note explaining the problem.

**Implied Warranty:** Any implied warranty shall be limited in duration to the terms of this warranty and in no case beyond the original selling price (except where prohibited by law). This warranty gives you specific legal rights and you may have other rights which vary from state to state.

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To register your product visit us at
**www.adctoday.com/register**

FOR QUESTIONS, COMMENTS,
OR SUGGESTIONS CALL TOLL FREE:

**1-800-ADC-2670**

OR VISIT

**www.adctoday.com/feedback**

This manual is available online in a variety of languages, follow the links for language options.

**www.adctoday.com/care**

**ADC®**
55 Commerce Drive
Hauppauge, NY 11788

Inspected, assembled and packaged in the U.S.A.
Chestpiece made in Korea
Headset made in Taiwan

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1-800-232-2670
fax: 631-273-9659
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