

# *e-sphyg*<sup>TM</sup> 2

9002

## Automatic Sphygmomanometer



## User's Manual



# A Special Thank You...

Thank you for choosing an ADC® blood pressure instrument. 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 sphygmomanometers that money can buy.

With proper care and maintenance, your ADC® blood pressure instrument 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.

## Advantages of Digital

Your new ADC® e-sphyg™ 2 sphygmomanometer is intended to provide you with all of the functionality of a traditional sphygmomanometer, with none of the problems associated with these devices. Using state-of-the-art technology, your e-sphyg™ 2 sphygmomanometer will provide you with performance, versatility, and reliability exceeding the most popular aneroid and mercurial instruments.

Its dual mode design will permit the instrument to fully measure a patient's blood pressure and pulse automatically. In manual mode, it allows you to use the time proven auscultatory method to obtain blood pressure readings.

Thank you for your patronage. It is indeed our pleasure to serve you.

Sincerely,  
American Diagnostic Corp.

# ADC® 9002 *e-sphyg*™ 2

## Table of Contents

Introduction and Intended Use .....	4
Warnings and Precautions .....	5
Symbols .....	6
Product Features .....	6
Name and Function of Each Part .....	7-8
Preparation for Use .....	9-10
How to Assemble Wall Model .....	11
How to Assemble Mobile Model .....	12
Cuff Connections .....	13
Taking Blood Pressure .....	13-16
Memory Function .....	17
Error Displays and Troubleshooting .....	18-20
Care and Maintenance .....	21
Wall Unit Parts and Tools .....	22
Mobile Unit Parts and Tools .....	23
Mobile Base Assembly Parts .....	24
Specifications .....	25
Limited Warranty .....	26
Replacement Parts .....	27
Technical Description .....	28-29

This manual is intended to assist the user in the safe and efficient operation of the Automatic Sphygmomanometer 9002. The product must be used in accordance with the procedures contained in this manual and must not be used for purposes other than those described herein. It is essential to read and understand the entire manual.

## Introduction and Intended Use

The 9002 digital ADC® e-sphyg™ 2 sphygmomanometer is a digital sphygmomanometer intended for measurement of systolic and diastolic blood pressure and pulse rate in adult patients, i.e., age 12 and above. This product is not designed for neonatal use. Inaccurate readings may result if it is used on a child's arm.
















Accuracy was evaluated during clinical studies in which results with the 9002 digital ADC® e-sphyg™ 2 sphygmomanometer were compared with simultaneous auscultatory measurements obtained with a standard sphygmomanometer. In these studies, the onset of the fourth (or fifth) Korotkoff sound was taken as the diastolic pressure for the purpose of determining overall efficacy. A copy of this study is available from ADC® on request. To ensure that accuracy is maintained, compare readings obtained with the 9002 digital ADC® e-sphyg™ 2 sphygmomanometer with values measured by a trained observer using a manual sphygmomanometer at least every 6 months.

Blood pressure measurements determined with this device are equivalent to those obtained by a trained observer using the cuff stethoscope auscultatory method, within the limits prescribed by the American National Standard, Manual, electronic, or automated sphygmomanometers.








The 9002 digital ADC® e-sphyg™ 2 sphygmomanometer has the ability to function according to its specifications in the presence of common arrhythmia such as atrial or ventricular premature beats or atrial fibrillation.



## Warnings and Precautions

-  **Warning** - 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.
-  **Warning** - If luer lock connectors are used in the construction of tubing, there is a possibility that they might be inadvertently connected to intravascular fluid systems, allowing air to be pumped into a blood vessel. Immediately consult a physician if this occurs.
-  **Warning** - Do not allow a blood pressure cuff to remain on patient for more than 10 minutes when inflated above 10mmHg. This may cause patient distress, disturb blood circulation, and contribute to injury of peripheral nerves.
-  **Warning** - Safety and effectiveness with neonate cuff sizes 1 through 5 is not established.
-  **Warning** - For all blood pressure systems that can be wall mounted, ensure that the unit is securely mounted prior to use to avoid damage to the instrument and potential patient injury.
-  **Warning** - Do not use the 9002 in an explosive environment such as where flammable anesthetics exist or inside an oxygen chamber with strong electrostatic and electromagnetic fields e.g., mobile phones.
-  **Warning** - Use of this instrument on patients under dialysis therapy or on anticoagulant, antiplatelets, or steroids could cause internal bleeding.
-  **Warning** - Do not use cuffs, AC adapters or batteries other than those included with this product or replacement parts supplied by the manufacturer.
-  **Warning** - This system may fail to yield specified measurement accuracy if operated or stored in temperature or humidity conditions outside the limits stated in the specifications section of this manual.
-  **Warning** - When using with an infant or child cuff, extra care must be taken to prevent over-inflation. To prevent discomfort or injury to the patient, ensure preset pressure is not set above the desired level.
-  **Warning** - This product may contain a chemical known to the state of California to cause cancer, birth defects, or other reproductive harm.
-  **Caution** - Federal law restricts this device to sale by or on the order of a physician or licensed health-care practitioner.
-  **Caution** - To avoid any possibility of accidental strangulation, keep this unit away from children and do not drape tubing around your neck.
-  **Note** - To obtain the greatest accuracy from your blood pressure instrument, it is recommended that the instrument be used within a temperature range of 50°F (10°C) to 104°F (40°C), with a relative humidity range of 15-90% (non-condensing).
-  **Note** - All connectors and inflation system should remain connected to the device during storage to avoid dust entering through the connector port.

# Symbols

Symbol	Definition	Symbol	Definition
	Read Operating Instructions		Manufacturer's Information
	Not made with Natural Latex		Temperature Limit
	Circumference Size		Humidity Limitation
			Type BF Equipment

## Product Features

### DUAL DISPLAY -

#### COLUMN LCD and SEGMENT LCD (Simulated Mercury Column)

The pressure can be read in the column LCD height and as digital value in the segment LCD.

### DUAL MEASUREMENT MODE -

#### "AUTO" and "MANUAL" Modes of Measurement

Determination of blood pressure can be made either automatically by the oscillometric method or manually by the auscultatory method using a stethoscope.

MODE	DEFLATION RATE	MEMORY
<b>AUTO</b>	Maintained at 4.0 to 4.9mmHg/sec	Last measured result auto saved
<b>MANUEL</b>	Maintained at preset rates of: 2.5, 4.5 or 6.5mmHg/sec	N/A

### Cuff Sizes (Auto Mode)

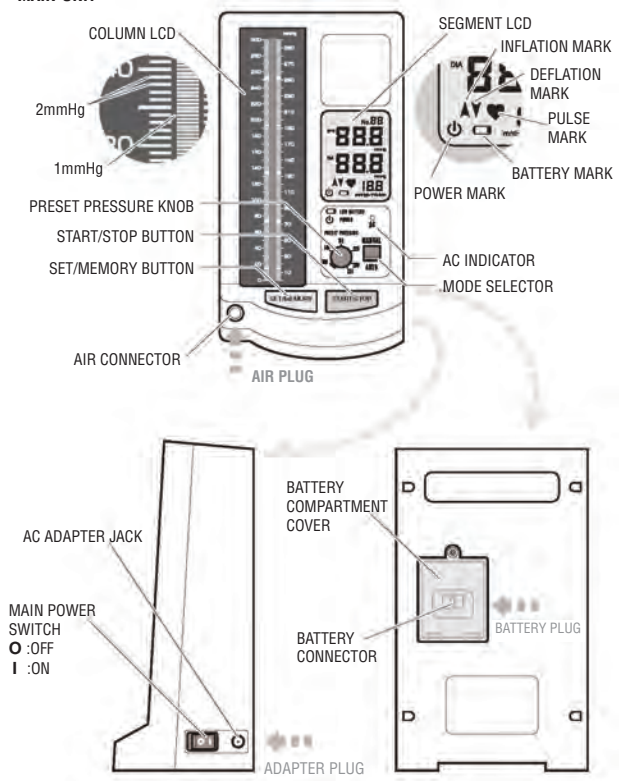
The Small Adult size cuff will accommodate arms of approximately 7.4 to 10.6 inches (19.0 to 27.0 centimeters). A Small Adult cuff should be used on patients 12 or older only (in auto mode).

The Adult size cuff will accommodate an upper arm circumference range of approximately 9.0 to 15.7 inches (23.0 to 40.0 centimeters).

The Large Adult size cuff will accommodate that of approximately 13.3 to 19.6 inches (34.0 to 50.0 centimeters).

# Name and function of each part

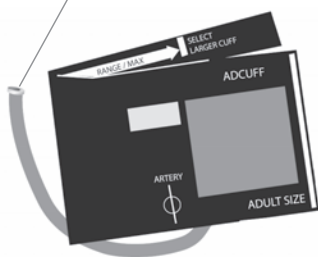
## MAIN UNIT



# Name and function of each part

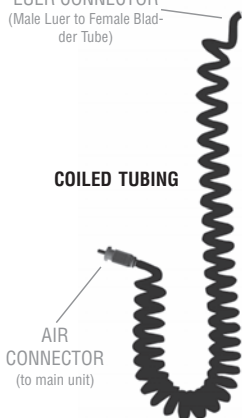
<b>Cuff Sizes</b>		
<b>SMALL ADULT</b> Arm circumferences of 7.4"-10.6" (19.0-27.0cm)	<b>ADULT</b> Arm circumferences of 9.0"-15.7" (23.0-40.0cm)	<b>LARGE ADULT</b> Arm circumferences of 13.3"-19.6" (34.0-50.0cm)

**BLADDER TUBE**  
(Female Luer Connection)



**ADCUFF™**

**LUER CONNECTOR**  
(Male Luer to Female Bladder Tube)



**COILED TUBING**

**AIR CONNECTOR**  
(to main unit)

**AC ADAPTER**



**ADAPTER PLUG**

**RECHARGEABLE NICKEL METAL HYBRID (NiMH) BATTERY**



**BATTERY PLUG**

**INSTRUCTION MANUAL**



**Other parts included depending upon model selected.**



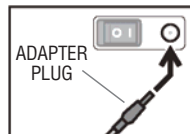
## Preparation for Use

### Connecting and Using the AC Adapter (All models)

Connect AC ADAPTER PLUG to AC ADAPTER JACK

Plug AC ADAPTER in the power socket.

AC INDICATOR is lit when AC ADAPTER is connected correctly.



### Installing the RECHARGEABLE NiMH Battery (All models)

**NOTE:** The battery enclosed in the product package is not charged, and needs to be charged for about 4 hours before use.

**NOTE:** Turn off the power and unplug AC ADAPTER before inserting the battery. Make sure "O" side of MAIN POWER SWITCH is pressed down.

Remove BATTERY COMPARTMENT COVER by loosening and removing the screw. (Fig. 1)

Connect BATTERY PLUG to BATTERY CONNECTOR inside the battery compartment and insert the battery. (Fig. 2)

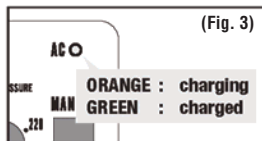
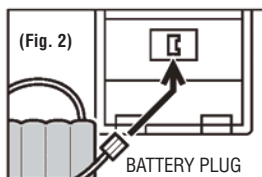
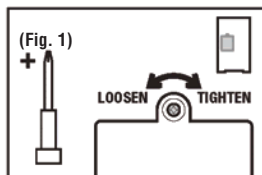
Put back BATTERY COMPARTMENT COVER and close it by inserting and tightening the screw.

Connect AC ADAPTER PLUG and plug AC ADAPTER in the power socket to charge the battery. The battery is charged regardless of whether the e-sphyg™ 2 is powered on or off.

Orange light of AC INDICATOR indicates that the battery is being charged. (Fig. 3)

The battery is fully charged after approximately 4 hours.

Unplug AC ADAPTER after the light turns green as it indicates the battery is charged.



The color of the AC INDICATOR may switch to green and return to orange if the 9002 is operated while charging battery, however it does not indicate a problem.



**BATTERY MARK** flashes in the segment LCD when the battery charge is low.  
Only a few more measurements remain before the battery runs down.



The battery needs to be recharged when **BATTERY MARK** is displayed.  
Measurement cannot be made.

**NOTE:** The rechargeable batteries may not be completely full after their initial charge or when they have not been used for an extended period of time. This should be solved once the unit has been used a few times and the batteries have been charged and discharged.

### Battery life

Life of the rechargeable NiMH battery is approximately 2 years. However it may vary depending on operating conditions. Replace the battery when **BATTERY MARK** is displayed often or when frequent charging of the battery becomes necessary.

### Tips on prolonging the battery life

The device is powered by the AC ADAPTER when it is connected; the installed battery is not used if the AC ADAPTER is connected.



- Remove the battery when operating the device with the AC ADAPTER for an extended period of time or when the battery does not need to be charged.
- Avoid charging the battery if it is not completely exhausted.

Do not forcefully remove the battery or pull out the plugs holding cords and cables.



Use indicated AC Adapter and the battery only.  
Contact your dealer if they are damaged.

### POWER MARK

The device goes to energy saver mode when it is left turned on and not operated for approximately 3 minutes. The mark will be displayed for an hour and then disappear. Make sure to turn off the device by pressing "O" side of MAIN POWER SWITCH down after each use especially when the device is powered by the battery.

The device activates from energy saver mode when either START/STOP button or SET/MEMORY button is pressed. It is recommended to activate the device by pressing SET/MEMORY button since the device could start inflation if START/STOP button is pressed. Press START/STOP button again and stop inflation if the cuff is not wrapped around arm.

# How to Assemble Wall Model

1. Securely attach wall bracket to flat surface using enclosed mollies and screws at desired height. *(It is advised to use a level to ensure proper mounting).* (Figure 1)
2. Attach manometer to wall bracket by lowering a top wall bracket, sliding male tab into female seat of the bracket. Secure the two together using the (6mm) allen bolt and washer from below. Tighten securely with large (6mm) allen wrench (Figure 2).
3. Securely attach cuff basket to flat surface to left of manometer using enclosed mollies and screws at desired height. *(It is advised to use a level to ensure even mounting)* (Figures 3 - 4).
4. Attach 8 foot length coiled tubing to air inlet on face of e-sphyg™ 2 (Figure 5).

Insert “male” luer connector (891M) on free end of coiled tubing to “female” luer connector (891F) on bladder tubing (Figure 6). Fold cuff and store in basket.

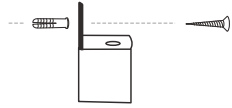


Figure 1

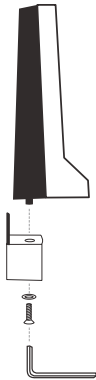


Figure 2



Figure 3

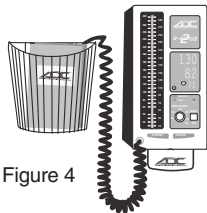


Figure 4

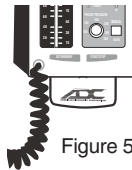


Figure 5



Figure 6

# How to Assemble Mobile Model

1. With base on its side connect upright outer pole to base using large (6mm) allen bolt. Tighten with large (6mm) allen key provided. Tighten hardware as securely as possible. (Note: To prevent loosening, hardware must be tightened securely and periodically checked) (Figure 1).
2. Slide spring and stainless steel inner pole inside outer pole with open end up (Figure 2).
3. Loosen (3mm) allen bolt on collar of cuff storage basket with small (3mm) allen key provided. Place cuff storage basket on top of stainless steel inner pole making sure the pole goes completely inside collar and tighten allen bolt with key (Figure 3).
4. Attach manometer to basket using (6mm) allen bolt and washer as shown. Tighten securely with large (6mm) allen key (Figure 4).
5. **Connect tubing as noted in Wall configuration #4.**
6. Adjust height of manometer by loosening adjusting knob and raising or lowering inner pole until gauge is at desired height. Tighten adjusting knob by hand (Figure 5).

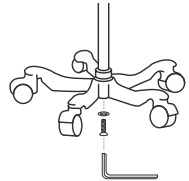


Figure 1

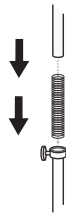


Figure 2

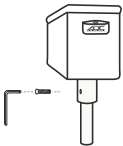


Figure 3

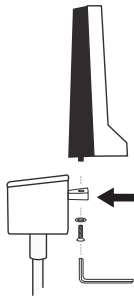


Figure 4

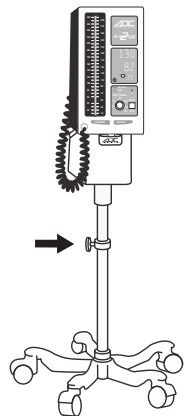
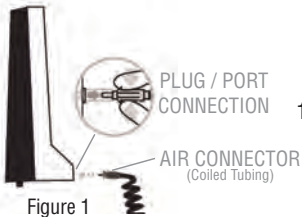
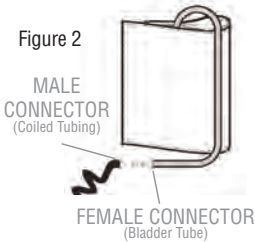


Figure 5

## Cuff Connections



1. Squeeze the middle of the plastic air connector on the end of coiled tubing between thumb and forefinger, and insert into the air connection port on the face of the e-sphyg 2™. Make sure connector firmly “lock” snaps into the port (Figure 1).



2. Firmly insert male connector of coiled tubing into female connector at end of the Adcuff™ bladder tubing. Be sure the connectors are tight (Figure 2).

## Taking Blood Pressure (Auto Mode)

Turn on the device by pressing “I” side of MAIN POWER SWITCH.



Move MODE SELECTOR downward and set the device to “AUTO”. See page 15 for “MANUAL” measurement.



Set the initial inflation value with PRESET PRESSURE KNOB.

Select the pressure approximately 30 to 40 mmHg above expected systolic pressure.  
Pressure can be set between 100 mmHg and 280 mmHg.  
Set the pressure at 180 mmHg if patient's systolic pressure is difficult to predict.  
The cuff is re-pressurized to a higher value if the preset pressure is too low for blood pressure to be taken during cuff deflation.



Apply the cuff to patient's arm.  
Choose the right size of cuff for your patient. **NOTE: Only these 3 cuffs may be used in auto mode.**

ARM CIRCUMFERENCE	CUFF SIZE
9.0 to 15.7 inches (23.0 to 40.0 cm)	ADULT
13.3 to 19.6 inches (34.0 to 50.0 cm)	LARGE ADULT
7.4 to 10.6 inches (19.0 to 27.0 cm)	SMALL ADULT

The lower edge of the cuff should be about 1" (2 to 3 cm) above the inner elbow and **BLADDER TUBE** should be over the inner part of the arm, positioning the **ARTERY MARK** of the cuff over the brachial artery.



Press the surface of the cuff to make sure that the hook and loop adhesive fastens securely.

The cuff should be wrapped loosely enough so that two fingers can be placed between the cuff and patient's arm. If the cuff is wrapped tighter or looser than this, inaccurate blood pressure readings may result.

If your patient is wearing a shirt that might restrict circulation in his/her upper arm or he/she rolls his/her sleeve up over the upper arm, the blood flow will be restricted, preventing accurate measurement.

#### Press START/STOP button.

The cuff is inflated automatically after zero settings.

Pressurization stops when pressure reaches the preset pressure value and pressure starts to descend.

Heart mark flashes in the segment LCD synchronizing detected pulse.

Deflation rate is displayed at the lower right corner of the segment LCD.



deflation rate

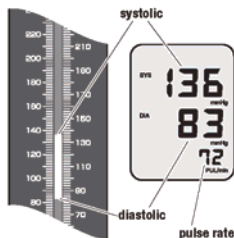
mmHg/s

**Press START/STOP button whenever the measurement should be interrupted.**

**The device will stop during any course of measurement procedure and rapidly exhaust air from the cuff.**

Air is rapidly exhausted from the cuff as measurement completes.

Blood pressure and pulse rate are displayed.



Turn off the device by pressing "O" side of MAIN POWER SWITCH.



The device will go to the energy saver mode after approximately 3 minutes if it is not turned off. See page 10.



**Make sure your patient is relaxed, has taken at least 5 minutes of rest before measurement and refrains from talking or moving during measurement.**

**Confirm that the cuff is kept at the height of patient's heart during measurement.**

**Do not execute repeated measurements for congestion of blood could result in false measurement. Allow the patient's arm to rest for at least 5 minutes.**

## Taking Blood Pressure (Manual Mode)

When you want to take your patient's blood pressure using the auscultatory method with a stethoscope, set the device to "MANUAL" mode.

Turn on the device by pressing "I" side of MAIN POWER SWITCH.



Move MODE SELECTOR upward and set the device to "MANUAL".

See page 13 for "AUTO" measurement.



Set the initial inflation value with PRESET PRESSURE KNOB.

Details on preset pressure ... page 13.



Press SET/MEMORY button to confirm and/or select the appropriate deflation rate.



The deflation rate is displayed at the lower right corner of the segment display.

The deflation rate can be selected from 2.5, 4.5 and 6.5 mmHg/s. The set deflation rate returns to the default value (2.5) when the device is turned off.



**Apply the cuff and stethoscope to the patient's arm in the same manner as the usual auscultatory method.**

**Press START/STOP button.**

The cuff is inflated automatically after zero settings.

Pressurization stops when pressure reaches the preset pressure value and pressure starts to descend.

Deflation rate is displayed at the lower right corner of the segment LCD.



**NOTE: Press START/STOP button whenever the measurement should be interrupted. The device will rapidly exhaust air from the cuff.**

**If cuff inflation was not sufficient, press and hold down START/STOP button once deflation has started and the cuff is pressurized again. Pressurization will continue while the button is pressed. Pressure does not exceed 290 mmHg.**

**Press START/STOP button when blood pressure is taken and air is rapidly exhausted from the cuff.**

**Air is also rapidly exhausted from the cuff when pressure descends to 30 mmHg.**



**Turn off the device by pressing "O" side of MAIN POWER SWITCH.**



The device will be in the energy saver mode after approximately 3 minutes if it is not turned off. See page 10.



**Make sure your patient is relaxed, has taken at least 5 minutes of rest before measurement, and refrains from talking or moving during measurement.**

**Confirm that the cuff is kept at the height of patient's heart during measurement.**

**Do not execute repeated measurements for congestion of blood could result in false measurement. Allow the patient's arm to rest for at least 5 minutes.**



## Memory Function

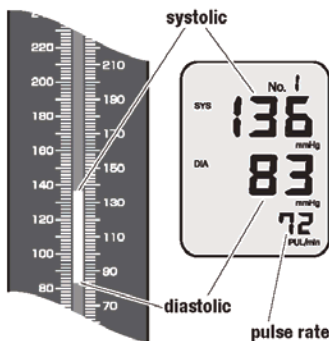
Measured result obtained in "AUTO" mode is automatically saved in the memory and can be recalled until next measurement is taken. The result is not saved when the measurement is performed in "MANUAL" mode.

To recall the result, turn on the device by pressing "I" side of MAIN POWER SWITCH and set the device to "AUTO" with MODE SELECTOR.

Press SET/MEMORY button and the last result from "AUTO" measurement is displayed.



MANUAL


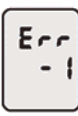
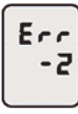
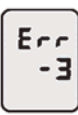




Turn off the device by pressing "O" side of MAIN POWER SWITCH.

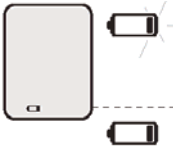


The device will be in the energy saver mode after approximately 3 minutes if it is not turned off. See page 10.



## Error Displays and Troubleshooting

ERROR SYMBOL/SYMPTOM	CAUSE	REMEDY
	<p><b>OVER-PRESSURIZATION:</b> The cuff was inflated to the maximum pressure because of movement of body, etc.</p>	<p>Make sure that the patient stays still during measurement.</p>
	<p><b>MEASUREMENT ERROR:</b> Measurement could not be made because of moving or talking during measurement.</p>	<p>Make sure the patient remains still and quiet during measurement.</p>
	<p><b>INFLATION ERROR: AIR PLUG</b> is not correctly inserted.</p> <p>Noise was detected.</p>	<p>Reinsert AIR PLUG and make sure that it is securely inserted.</p> <p>Make sure that the patient stays still and quiet during measurement.</p>
	<p><b>DEFLATION ERROR:</b> Movement or talking was detected during measurement.</p> <p>Extreme changes in pressure occurred during measurement.</p>	<p>Make sure the patient remains still and quiet during measurement.</p> <p>Do not let patient move during measurement.</p>
	<p><b>CHECKING MODE:</b> See page 21.</p>	<p>Turn off the device once and then turn it on again to take measurement.</p>
 <p>Nothing is being displayed when MAIN-POWER SWITCH is pressed down in the ON position.</p>	<p><b>NO POWER:</b> AC ADAPTER is not correctly connected.</p> <p>Battery is exhausted.</p> <p>9002 was left turned on but has not been operated for over an hour.</p>	<p>Reinsert AC ADAPTER and make sure that it is securely inserted.</p> <p>Charge the battery or use AC ADAPTER.</p> <p>Turn off the device or press START/STOP button or SET/MEMORY button to activate the device from energy saver mode.</p>

## Error Displays and Troubleshooting

ERROR SYMBOL/SYMP TOM	CAUSE	REMEDY
	<p><b>LOW BATTERY:</b> Battery is weak.</p> <p><b>BATTERY ERROR:</b> Charge the battery.</p> <p>The indication appearing during LCD segment test, which is performed when the unit is turned on, does not indicate low battery or battery error.</p>	<p>Change the battery. Only a few measurements can be made before the battery runs down.</p> <p>Charge the battery. Measurement cannot be conducted.</p> 
	<p><b>ENERGY SAVER MODE:</b> The device was left turned on and has not been operated for over approximately 3 minutes.</p>	<p>Turn off the device or press START/STOP button or SET/MEMORY button to activate the device from energy saving mode. Make sure to turn off the device by pressing "O" side of MAIN POWER SWITCH after use.</p>
<p>Measurement is interrupted once and the cuff is inflated again.</p>	<p>When the preset pressure value was not high enough to make measurement or when noise was detected, the cuff is pressurized again to a higher level.</p> <p>Patient moved during measurement.</p>	<p>This does not indicate a problem.</p> <p>Make sure that the patient stays still and quiet during measurement.</p>
<p>Blood pressure is different each time. The reading is extremely low (or high)</p>	<p>Patient is not being measured with correct posture. Blood pressure readings constantly vary with time of measurement and physical and mental condition.</p>	<p>Make sure that the patient is being measured with correct posture.</p>
<p>Pulse rate is too low (or too high).</p>	<p>Patient moved during measurement. There was not enough rest taken before measurement.</p>	<p>Make sure that the patient stays still during measurement. Allow your patient to rest for at least 5 minutes.</p>

## Error Displays and Troubleshooting

<b>ERROR SYMBOL/SYMP TOM</b>	<b>CAUSE</b>	<b>REMEDY</b>
Measurement result cannot be recalled or is not stored.	Blood pressure was taken in "MANUAL" mode.	Measurement result is saved only when it is taken in "AUTO" mode.
Cuff inflation does not start.	Battery is exhausted	Measurement cannot be made when BATTERY MARK is displayed. Recharge the battery.
AC INDICATOR is lit even when 9002 is turned off.	Battery is inserted.	AC INDICATOR also indicates whether the battery is being charged or it is not being charged.
The column LCD is dim or brightness is not steady.	9002 is operated with the battery.	Difference in voltages between AC ADAPTER and the battery lead to differences in LCD brightness. This does not indicate a functional problem.

If you cannot get correct measurement with the methods above, do not tamper with the internal mechanism. Contact your dealer. If the unit malfunctions, return it to the dealer or an authorized service representative for servicing according to the warranty. The manufacturer provides service data to qualified dealers.

## Care and Maintenance

Because the device includes precision parts, care should be taken to avoid extreme temperature variations, humidity, shock, dust, and direct sunlight. Do not drop or strike the device. Make sure not to expose the unit to moisture. This unit is not water resistant.

Use only a soft, dry cloth to clean the device. Do not use gasoline, paint thinner, chemicals such as strong bases, strong acids, oxidizing agents, and reducing agents, or other strong solvents on the unit. Since the cuffs may absorb perspiration and other fluids, inspect them for stains and discoloration after each use. Sponge with a damp cloth. If necessary the cuff can be washed in cool water with mild soap or detergent-disinfectant. Remember to remove the bladder prior to washing. After washing, the cuff should be rinsed and allowed to air dry. **NEVER** iron.

When storing the device, do not place heavy objects on it and do not coil BLADDER TUBE too tightly. When the unit has been stored at a temperature below the freezing point, keep it for at least 1 hour in a warm place before using. Remove the battery if the device is to be stored for an extended period of time. Keep the batteries out of the reach of children.

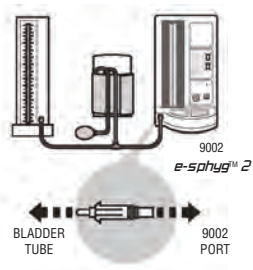
**Caution:** Do not inflate the cuff when it is not wrapped around an arm.

**Caution:** Do not disassemble or modify the device.

We suggest that the device be checked every 2 years. This operation may only be performed by the manufacturer or by firms authorized by the manufacturer.

### Checking pressure accuracy

Connect a cuff wrapped around a firm cylinder to the 9002 e-sphyg™ 2 and a standard manometer. Turn on the 9002 e-sphyg™ 2 while pressing and holding the START/STOP button down. Release the button after the initial display (all segment display) disappears. Two "0"s are displayed and the 9002 e-sphyg™ 2 is in CHECKING MODE. Inflate the cuff with an inflation bulb and compare the readings. Pressure accuracy is to be  $\pm 3\text{mmHg}$ . Contact dealer if accuracy of your 9002 e-sphyg™ 2 is invalid.

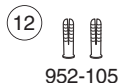
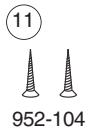
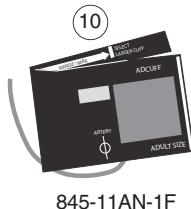
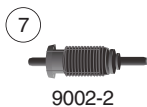
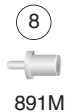
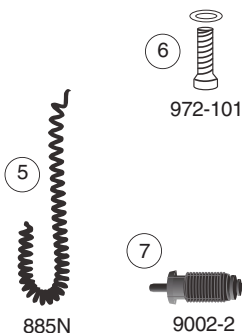
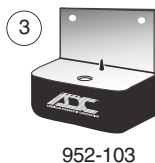
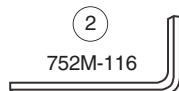
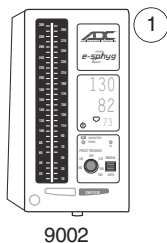


**(A test kit may be purchased from an authorized dealer)**



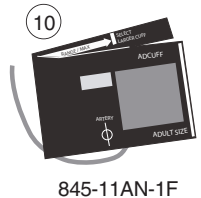
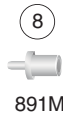
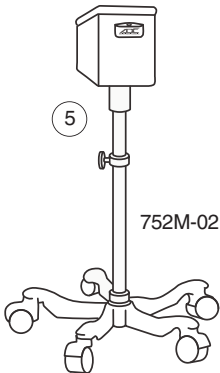
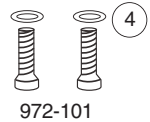
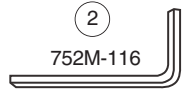
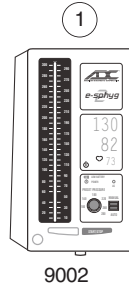
## 9002W - Wall Unit Parts & Tools

ADC Item	Item no.
1. <i>e-sphyg</i> ™ 2	9002
2. 6mm Allen Wrench	752M-116
3. Wall Bracket	952-103
4. Wall Basket with (3) screws / (3) mollys	952-025
5. Coiled tubing	885N
6. Mounting Bolt/Washer (1)	972-101
7. Connector	9002-2
8. Connector, Male	891M
9. Connector, Female	891F
10. Adcuff™ & Bladder, Adult	845-11AN-1F
11. (2) Screws (for wall bracket)	952-104
12. (2) Mollys (for wall bracket)	952-105

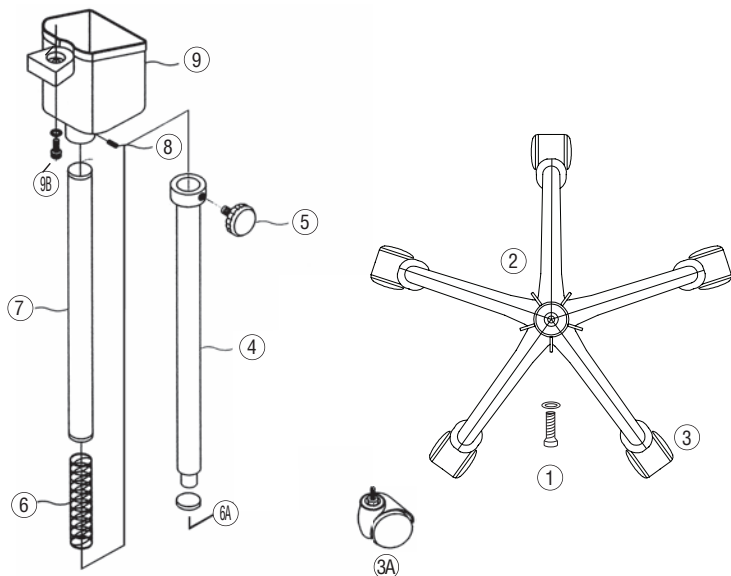


# 9002M - Mobile Unit Parts & Tools

ADC Item	Item no.
1. <i>e-sphyg™ 2</i>	9002
2. 6mm Allen Wrench	752M-116
3. 3mm Allen Wrench	752M-117
4. Mounting Bolt/Washer (2)	972-101
5. Mobile Stand	752M-02
6. Coiled tubing	885N
7. Connector	9002-2
8. Connector, Male	891M
9. Connector, Female	891F
10. Adcuff™ & Bladder, Adult	845-11AN-1F



## Mobile Base Assembly Parts



	<b>ADC Item</b>	<b>Item no.</b>
1	Center Pole Screw (1) Washer (1)	<b>972-101</b>
2	Base	<b>972-080</b>
3	Casters (5)	<b>972-106</b>
3A	Single Caster	<b>972-106-1</b>
4	Outer Pole	<b>972-107</b>
5	Knob	<b>972-108</b>

	<b>ADC Item</b>	<b>Item no.</b>
6	Spring	<b>972-109</b>
6A	Gasket, Rubber	<b>972-107A</b>
7	Inner Pole	<b>972-110</b>
8	Basket Tightening Key	<b>972-111</b>
9	Basket	<b>972-112</b>
9B	Manometer Mounting Hardware	<b>752-114</b>



# Specifications

Operating Principle:	Oscillometric method*
Indicator:	300 digits column LCD and 10 digits segment LCD
Pressure Indicating Range:	0 to 300 mmHg (cuff pressure)
Measuring Range:	50 to 250 mmHg (systolic) 40 to 180 mmHg (diastolic) 40 to 160 bpm (pulse rate)
Accuracy:	±3 mmHg (cuff pressure) ±5% of reading (pulse rate)
Inflation :	Automatic inflation
Deflation:	Electric control valve
Exhaust:	Automatic exhaust valve
Power Supply:	Power Supply: 7.0 VDC AC Adapter (Model UM318-0725 or 4.8 VDC Rechargeable Ni-MH Battery Adapter I/P: AC100-240V
Power Consumption :	14W (max.)
Memory:	single measurement result*
Operating Environment:	+50°F to+104°F, 15 to 85% relative humidity
Storage Environment:	-4°F to+140°F, 15 to 85% relative humidity

## Coverage Arm Circumference

Adult Size Cuff:	9.0 to 15.7 inches (23.0 to 40.0 cm)
Large Adult Size Cuff:	13.3 to 19.6 inches (34.0 to 50.0 cm)
Small Adult Size Cuff:	7.4 to 10.6 inches (19.0 to 27.0 cm)

## Main Unit

Weight:	Approx. 2.2 lb. [1000 g], without AC adapter or battery
Size:	5.4 x 10.6 x 3.8 in [136 x 266 x 96 mm] (W x D x H)

Specifications are subject to change without notice due to improvements in performance.

\* marks only apply to "AUTO" measurement.

## Limited 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 retail purchaser only and commences with the date of delivery.
2. The entire sphygmomanometer is warranted for two years.
3. Cuff, bladder and coiled tubing are warranted for three years.
4. The manometer is warranted to remain accurate to  $\pm 3$ mmHg over its full range when compared to a reference standard for life.

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

**What is not covered:** Transportation charges to and from ADC®. Damages caused by abuse, misuse, accident, or negligence. Incidental, special, or consequential damages. 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, a brief note explaining the problem, and \$2.00 to cover the cost of return shipping and handling.

**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.

To Register Your Product, visit us at  
[www.adctoday.com/register](http://www.adctoday.com/register)

## Replacement Parts

<b>Component</b>	<b>Part No. Latex-free</b>	<b>Model Use</b>
Coiled Tubing 4'	886N	Desk
Coiled Tubing 8'	885N	Mobile, Wall
Cuff & Bladder - Sm. Adult	845-10SARB-1F	All Models
Cuff & Bladder - Adult	845-11AN-1F	All Models
Cuff & Bladder - Lg. Adult	845-12XBD-1F	All Models
Female Luer Connector	891F	All Models
Male Luer Connector	891M	All Models
Plastic Connector	9002-2	All Models
AC Adapter	9002-3	All Models
Rechargeable Battery Pack	9002-5	All Models

**FOR QUESTIONS, COMMENTS,  
OR SUGGESTIONS  
CALL TOLL FREE: 1-800-ADC-2670  
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[WWW.ADCTODAY.COM/FEEDBACK](http://WWW.ADCTODAY.COM/FEEDBACK)**

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# Technical Description

The 9002 complies with the EMC, electromagnetic compatibility, standard, IEC60601-1-2. Refer to the tables below for specific information regarding compliance to the standard.

The 9002, as a medical electrical equipment, needs special precautions regarding EMC and needs to be installed and put into service according to

the EMC information provided below.

Portable and mobile RF communications equipments can affect the device.

The use of accessories other than those specified in this manual may result in increased emissions or decreased immunity of the device.

The 9002 should not be used adjacent to or stacked with other equipment.

Table 1 - Guidance and manufacturer's declaration - electromagnetic emissions -

The 9002 is intended for use in the electromagnetic environment specified below. The customer or the user of the 9002 should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The 9002 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 9002 is suitable for use in all establishments, including domestic establishments and directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	N/A	

Table 2 - Guidance and manufacturer's declaration - electromagnetic immunity -

The 9002 is intended for use in the electromagnetic environment specified below. The customer or the user of the 9002 should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	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 ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply lines IEC 61000-4-11	<5% UT (>95% dip in UT) for 0,5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycles <5% UT (>95% dip in UT) for 5 sec	<5% UT (>95% dip in UT) for 0,5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycles <5% UT (>95% dip in UT) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the 9002 requires continued operation during power mains interruptions, it is recommended that the 9002 is to be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE U<sub>T</sub> is the a.c. mains voltage prior to application of the test level.

Table 4 - Guidance and manufacturer's declaration - electromagnetic immunity -


The 9002 is intended for use in the electromagnetic environment specified below. The customer or the user of the 9002 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 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 Vrms 80 MHz to 2,5 GHz	3 Vrms  3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the 9002, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.  Recommended separation distance $d=[3,5/\sqrt{1}] P$  $d=[3,5/E1] P$ 80 MHz to 800 MHz $d=[7/E1] P$ 800 MHz to 2,5 GHz 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 meters (m).  Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, <sup>a</sup> should be less than the compliance level in each frequency range. <sup>b</sup> Interference may occur in the vicinity of equipment marked with the following symbol: 
NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.			
NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
<sup>a</sup> Field strength from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radios broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the 9002 is used exceeds the applicable RF compliance level above, the 9002 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the 9002.			
<sup>b</sup> Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.			

Table 6 - Recommended separation distances between portable and mobile RF communications equipment and the 9002 -

The 9002 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the 9002 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the 9002 as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter, W	Separation distance according to frequency of transmitter, m		
	150 kHz to 80 MHz, $d=[3,5/\sqrt{1}] P$	80 MHz to 800 MHz, $d=[3,5/E1] P$	800 MHz to 2.5 GHz, $d=[7/E1] P$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.			
NOTE1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.			
NOTE2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			



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