Core
Medical Instrument Primer

www.adctoday.com

American Diagnostic Corporation

We're Here to Help . . .

ADC, a world leader in core diagnostic products to the physician, hospital (acute care), EMS (prehospital), and nursing home (extended care) markets has developed a retail program to help you sell our products in your store.

This guide will provide a basic understanding of some of the most popular tools and instruments used by the healthcare student. For a more in-depth explanation along with instructional videos, please visit our website at **www.adctoday.com** and follow the links.

The ADC Advantage

- **Profitable:** The ADC line is one of the most consistently high profit lines for your store in this category. At full MSRP our products provide a 40% gross margin. Additional discounts can bring that up to well over 50%. ADC's higher quality means less lost on customer returns.

- **Competitive:** ADC's value proposition provides a significant price advantage over some of the premium priced brands in our core categories while still providing YOU with greater margins.

- **Comprehensive:** The MOST comprehensive line of value priced core diagnostic equipment and personal instruments means one vendor for all of your customer's needs. Blood pressure instruments, stethoscopes, EENT (diagnostic) instruments, thermometers, penlights, neuro/reflex hammers, personal instruments, and caseware are among the product categories we manufacture.

- **QMS (Quality Management System):** ADC is one of the few suppliers in these categories registered as a manufacturer with the FDA. We are one of the few firms to hold the prestigious ISO 9001:2008 AND ISO 13485:2003 quality system certifications. We hold most of our own 510(k)s (FDA required premarket approvals on Class II devices)

- **Quality Control:** ADC maintains an extensive QC lab employing proprietary equipment that allows us to test virtually every product and component we sell.

- **Traceability:** Every diagnostic instrument (scope, sphyg, EENT product, neuro hammer) is marked with a lot number that identifies the date of assembly, inspection or packaging and the ID number of the individual responsible for final assembly. This provides for the utmost in traceability.

- **Dependability:** ADC sources the components on a mostly exclusive basis from the world's leading ISO certified contractors for the finest quality, dependability, and value. Some of our relationships date more than 2 decades.

- **Domestic Content:** Virtually every product is individually inspected and packaged in the U.S.A. Many products are also assembled in the U.S.A. A refreshing change from the Chinese imports that most companies supply.

- **Legacy:** As a market leader now nearing our fourth decade of service, you can be confident in our ability to meet or exceed yours and your customer's expectations.

- **Social responsibility:** ADC has set aside 25% of our production department staffing for individuals with disabilities. We are one of NY's largest private employers of the developmentally disabled and have been honored at the national, state and local levels for our efforts.

- **Extensive Warranties:** ADC products are backed by the industry's most comprehensive warranties protecting YOUR customer's investment.

- **Support:** ADC has developed a complete program to help YOU sell ADC products including:
    - Attention Getting Retail Packaging
    - Striking Floor and Counter Displays
    - Planograms
    - Literature
    - Store Posters
    - Cash/Counter Mats
    - Color Guides
    - Technical Information
    - Comprehensive Website with instructional videos

Unrivaled technical and sales support is only a toll free phone call away

1-800-ADC-2670.

ADC

Quality Control

Quality is the primary focus for American Diagnostic Corporation. From our extensive inspection processes for all parts and components through our in-process inspection techniques during manufacturing to our final product inspection; we take quality seriously and engineer it into every stage of our product life cycle.

Gauge Endurance Test Machine

Starting with incoming inspections, every component and part used in ADC products is subjected to rigorous inspection techniques based on statistically valid ANSI (American National Standards Institute) sampling plans. Using pre-defined inspection points, samples are evaluated to ensure that the components meet our requirements for reliability, quality, and consistency every time.

Hook & Loop Adhesive Test Machine

ADC employs a number of custom built test machines and equipment calibrated to NIST traceable standards. These machines are designed to rigorously test many of the key components used in the manufacture of our blood pressure, stethoscope, and thermometry lines. We even perform destructive tests for some aspects of component performance to ensure unsurpassed reliability!

Valve Leak Test Machine

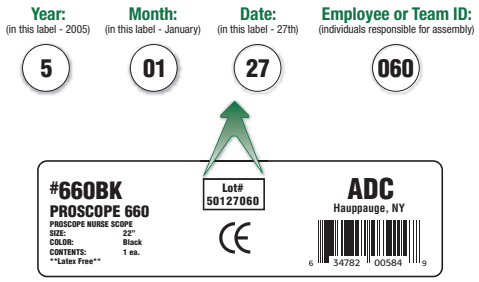
Our sphygmomanometer line is tested to ensure that our gauges are the very best in accuracy, endurance, and overall performance. We test numerous parts of the inflation system, including the valve (for leakage on our custom built leak test machine) and even the cuff hook and loop integrity (on our hook and loop adhesive test machine) to guarantee that our devices will function time and again, reliably and accurately. A small batch of every lot of gauges is also subjected to destructive testing on our endurance machine where we ensure that they can continue to function up to three times longer than the industry standard!

Thermometer Water Bath

Our thermometry products are tested using calibrated black body test devices and/or water baths to ensure that each and every batch of product that we produce is reliable and accurate once it reaches the hands of our customers. We also perform extensive physical and dimensional testing on all of the rest of our products, with a special focus on ensuring that only the highest quality parts and components are used in each and every one.

Lot Numbering

The product label on virtually all ADC products contains a lot number for full traceability.



A systemic approach

Quality does not end when the inspection processes are complete. American Diagnostic Corporation applies quality to every aspect of our business to ensure that our customers have the very best experience possible. This includes paying close attention to customer feedback and experiences when using our products.

To assist with the goal of continuously improving our customers' experiences, ADC has obtained ISO 13485:2003 and ISO 9001:2008 certifications. We have also obtained CE marking for sales in the European Union and licensing in Canada. These certifications confirm our commitment to quality and show that our processes and systems have been evaluated by third party auditors to ensure that we continue to do what we say we do; make high quality products that meet relevant national and international standards with consistency time and again.

STETHOSCOPES

What is a Stethoscope?

The stethoscope is the most ubiquitous instrument in healthcare and the symbol of the medical profession.

Steth-o-scope (from the Greek ***st˜ethos, meaning to inspect the chest)***, is a medical diagnostic instrument for listening to respiratory, cardiac, and other sounds within the body. The stethoscope was first invented by French diagnostician Rene Laennec in 1816. The first design was nothing more than a foot-long, trumpet-shaped wooden cylinder that he placed on the chests of his patients. Today, there are three basic types of stethoscopes - acoustic, amplifying, and electronic.

Acoustic scopes are by far and away the most popular in unit volume BUT electronic scopes are gaining popularity in large part because of the efforts of category leader 3M™ Littmann®.

Acoustic scopes work like a megaphone in reverse, amplifying sounds by collecting them from a relatively large area (the chestpiece) and funneling them to a smaller area (the tubing and eventually the ear pieces).

The modern acoustic stethoscope consists of the following parts:

1. Binaurals (aural tubes) with ear pieces often called the headset
2. Tubing (on some models a distinct part, on others permanently assembled to the binaurals)
3. Chestpiece (varying construction depending upon the type)

The chestpiece is available in single sided or double sided configurations. Most single sided chestpieces consist of a diaphragm designed for detection of high frequency sounds. More advanced multi-frequency (or tunable) diaphragm only chestpieces have been around for about 20 years. Combination, or double sided chestpieces consist of a diaphragm on one side and a bell on the other. The bell is designed to detect lower frequency sounds. A rotatable valve stem allows selection of one side while the other is de-activated. Hybrid designs include combination scopes that have a multi-frequency diaphragm (described above), triple sided chestpieces, and chest-pieces with interchangeable fittings (Sprague or convertible type).

660
Institutional

670
Institutional

641
Sprague

601
Cardiology

600
Multi-Frequency

657
Electronic

MODERN STETHOSCOPE DESIGN

A contemporary, top-of-the-line acoustic scope typically consists of a combination chestpiece fabricated from stainless steel or some other high quality alloy. The acoustically sensitive diaphragm is usually secured to the chestpiece with a non-chill PVC or threaded metal ring.

The low frequency bell is usually encased in a non-chill PVC sleeve that minimizes patient discomfort. A rotatable valve stem allows selection of the appropriate side. The eartubes (binaurals) and PVC tubing are usually a one piece assembly (headset) to reduce acoustic leakage. The earpieces (eartips) are made from hard or soft PVC or other polymer and may be secured by friction fit, or screw-on thread. (The photo at left illustrates a typical stethoscope design).

Diaphragm vs. Bell

The diaphragm is used to filter out the lower frequencies and accent the higher range. The degree of pressure exerted on the diaphragm will affect the frequencies attenuated. For example, to detect the highest frequency murmur or aortic regurgitation, very firm pressure should be applied to the diaphragm which must be positioned over the 3rd left sternal border.

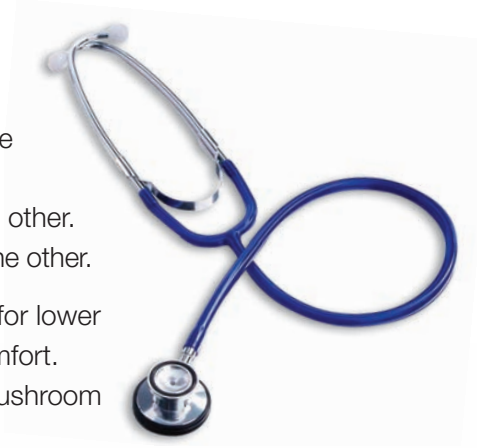
By using light pressure on the diaphragm, low frequencies such as gallop or diastolic rumble can be brought out. The diaphragm side is also the primary chestpiece for auscultation of the lungs.

The bell is most useful in detecting faint, low frequency sounds and murmurs. VERY light pressure, with the bell barely making an air seal with the skin of the chest wall is required for correct auscultation. The bell is also best suited to pick up low frequency S3 and S4 heart sounds, is the correct chestpiece for detection of Korotkoff (pressure pulse) sounds in the measurement of blood pressure with a sphygmomanometer.

There are literally dozens of models made by a half dozen leading manufacturers at price points from just a few dollars for disposable models to over $500 for digital models with advanced features.

The 3 most famous brands are Littmann (a 3M™ company), Welch Allyn®, and ADC which markets its products under the ADSCOPE and Proscope brands.

STETHOSCOPE, LIGHTWEIGHT Combination Series



Also referred to as a dual head stethoscope. Economical scope popular with institutional users, nurses, and prehospital professionals. Acoustic performance adequate for general assessment most notably blood pressure measurement. Traditional combination chestpiece features diaphragm on one side, bell on the other. By rotating the chestpiece, a valve/stem activates one side, while deactivating the other.

The diaphragm side is designed for detection of high frequencies; the bell side for lower frequencies. The bell side is equipped with rubber non-chill ring for patient comfort. Adjustable (rotatable binaurals) for a snug aural fit. Includes extra pair of soft mushroom eartips. The three most significant features of the combination scope are:

- **economical price**
- **lightweight design**
- **wide color selection**

ADC Proscopes:

Feature	Benefit
Lightweight construction	Comfortable to wear for extended periods
Affordable	Suitable to high theft areas
Combination Chestpiece	High Frequency (diaphragm) & Low Frequency (bell) response
Superior Acoustic Performance	ADC's proprietary diaphragm/rim design provides up to 50% greater acoustic transfer
Greater comfort	Non-chill diaphragm AND bell rims for patient comfort
Longer aluminum binaurals	Most use weightier chrome plated brass. Our longer length and lighter weight improve ergonomics
PVC Tubing	Hypo allergenic
22" Tubing length	Optimum length to balance acoustic and comfort requirements
Adjustable binaurals	Can be adjusted to sit snugly in the ear
Wide selection of tubing colors	For personal preference, departmental coding, or to coordinate with uniform
Spare mushroom eartips	For greater comfort (many brands don't include)
Packaged and Assembled in the U.S.A.	For better quality control. Brings work "home" to U.S. citizens

STETHOSCOPE, ADSCOPE Sprague Series

Traditional

The most popular stethoscope model on the market today, unit sales of the Sprague style (all brands) may equal the combined sales of all other models on the market. Most popular with nursing and prehospital care professionals (EMT's, paramedics, etc.), and PA's. Developed by Hewlett Packard in the 1940's under the trade name Rappaport Sprague, the original model once retailed for nearly $135.00.

The Sprague is popular due to its unique combination of versatility, ruggedness, acoustic excellence, and value. Unlike traditional combination (dual head) chestpiece designs the Sprague features a threaded chestpiece drum with 5 interchangeable chestpiece fittings: an adult and pediatric diaphragm, large, medium, and small bell chestpiece. This permits use on a wide range of patients from infants to adults to meet virtually any professional requirement. By constructing the bells from plastic, there is no need for a non-chill bell ring.

Single Tube

The Sprague's substantial chestpiece weight contributes to its acoustic excellence. The two tube configuration improves acoustic separation (stereo imaging), while the 22" length is optimally sized for superior acoustics and user comfort. Four different types of eartips, 1 hard, 3 soft allow the wearer to select the size and shape most comfortable. The three bell chestpieces, 3 spare pair of eartips, and two spare diaphragms (1 adult, 1 pediatric) are stored in a convenient accessory pouch. Also available in one tube model. The three most significant features of the Sprague are:

- **versatility**
- **acoustic excellence**
- **unsurpassed value**

ADC Sprague:

Feature	Benefit
Threaded Chestpiece Drum	Interchangeable chestpiece fittings to accommodate virtually any patient and requirement
Patented valve mechanism	Virtually eliminates acoustic leakage between the two chestpiece sides (big problem on MOST competitive units). ADC exclusive feature.
Chestpiece key	Facilitates replacement of broken diaphragm. ADC exclusive feature
Gasket Assembly	Secures chestpiece fittings to drum - reduces risk of loss. ADC exclusive feature
Two tube design	Improves acoustic separation
Combination Chestpiece	High Frequency (diaphragm) & Low Frequency (bell) response
22" Tubing length	Optimum length to balance acoustic and comfort requirements
Adjustable binaurals	Can be twisted to sit snugly in the ear
Wide selection of tubing colors	For personal preference, departmental coding, or to coordinate with uniform
Four different pair of eartips included	Allows for a truly snug comfortable aural fit
Spare diaphragms	Reduces downtime and need for factory or dealer servicing.
Substantial weight/bulk	Better isolates desired sounds, eliminates extraneous artifacts.
Inspected and packaged in the U.S.A.	For better quality control. Brings work “home” to U.S. citizens

STETHOSCOPE, ADSCOPE Cardiology Series

Top-of-the-line Cardiology style stethoscopes are distinguished by their substantial bi-lumen headset (binaural/tubing assembly). Unlike most stethoscopes with a single lumen, Cardiology scopes have two sound pathways within a single tube to enhance stereo separation.

Cardiology scopes are typically available with traditional combination (diaphragm/bell) chestpieces, or specially constructed single sided chestpieces whose frequency response can be altered to simulate that of a diaphragm or bell by changing the pressure applied. ADC's design is called multi-frequency. Cardiology scopes are typically made from Stainless steel though some also use lightweight aluminum in the binaurals. Cardiology scopes are the instruments of choice for demanding practitioners.

Quality Cardiology scopes typically carry an MSRP of $125 and up. ADC offers three models – our Platinum (multi-frequency design), Convertible with multi-frequency diaphragm and Original. The most significant features of Cardiology scopes:

- **Substantial chestpiece fabricated from stainless steel**
  Either combination or multi-frequency (or both)
- **Substantial Bi-lumen headset (binaural tubing assembly)**
- **Unsurpassed acoustic performance**

ADC Cardiology Scopes:

Feature	Benefit
Stainless steel construction	Chestpiece, stem and binaurals CNC machined from surgical grade stainless steel for rugged durability (3M™ Littmann® uses aluminum)
Convertible model (601) threaded design converts bell to pediatric diaphragm	Versatility - ADC exclusive feature
Multi-frequency diaphragm on select models (600 multi-frequency and 601 convertible)	Both low and high frequency response without rotating chestpiece
Bi-lumen headset	Improves stereo separation
Internal spring	Reduces sound clutter
Fixed aural tubes at 15°	For a snug ergonomic fit
ADSOFT Threaded eartips	Threaded for backward compatibility with older models. Snug fit virtually eliminates acoustic leakage and provides unsurpassed comfort
Substantial weight/bulk	Better isolates desired sounds, eliminates extraneous artifacts
Individually inspected in the U.S.A.	For better quality control. Brings work "home" to U.S. citizens
Lifetime warranty on metal parts	Protects the owner's investment (Littmann has 7 year warranty)

STETHOSCOPE, ADSCOPE Clinical Series

Our most popular premium stethoscopes, our clinical series are available in a number of models and color options to suit the practitioner's preferences. Clinical models are typically fabricated from stainless steel, zinc, or aluminum alloy and feature a traditional single lumen headset. Lighter in weight and less bulky than Cardiology models, Clinical models typically carry an MSRP of under $100. Popular with Nurses, EMTS, Students, PA's, NP, and Primary Care or non cardiac specialists. ADC offers 4 adult models and specialty pediatric models. The most significant features of Clinical Series scopes are:

- **CNC machined chestpieces fabricated from premium metals**
- **Internal spring binaurals with reinforcing yoke**
- **Ultra comfortable earpieces**
- **Extensive warranties**

ADC Clinical series scopes feature:

Feature	Benefit
Stainless steel or aluminum alloy construction	Chestpiece, stem and binaurals CNC machined from surgical grade stainless steel for rugged durability or lightweight aluminum for ergonomic comfort.
Combination diaphragm/bell design (select models)	Allows for complete range of auscultation
Multi-frequency Design (select models)	Allows selection of diaphragm or bell modes without repositioning chestpiece
Single-lumen headset	Improves portability
Internal spring	More attractive and less likely to snag on labcoat
Reinforcing yoke	Increased durability at stress point
Fixed aural tubes at 15°	For a snug ergonomic fit
22" PVC Tubing	Available in dozens of colors to allow personalization or departmental coding
ADSOFT Threaded eartips	Threaded for backward compatibility with older models. Snug fit virtually eliminates acoustic leakage and provides unsurpassed comfort
Individually inspected in the U.S.A.	For better quality control. Brings work "home" to U.S. citizens
Extensive warranty on metal parts	Lifetime on all but the 609 series. Protects the owner's investment (Littmann's models offer 5 or 3 year)

Sphygmomanometers (mechanical BP instruments)

What is Blood Pressure?

Arterial blood pressure is the force exerted by the blood against the walls of the artery. Arterial blood pressure is constantly changing during the course of the cardiac cycle. The highest pressure in the cycle is the systolic pressure; the lowest is the diastolic pressure. The numerical difference between the two is the mean arterial pressure.

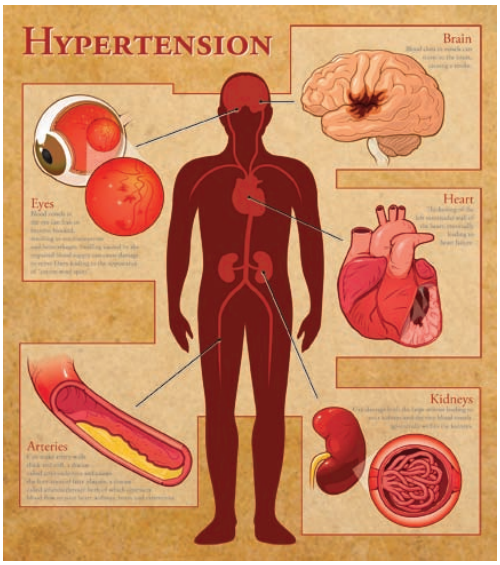
Blood pressure is measured in millimeters of mercury (mmHg) and is expressed as systolic/diastolic: thus 120/80mmHg.

The internal factors that determine blood pressure are

* Cardiac Output
* Peripheral Vascular Resistance
* Volume of blood in the arterial system
* Viscosity of the blood
* Elasticity of the arterial walls

External factors that influence blood pressure are:

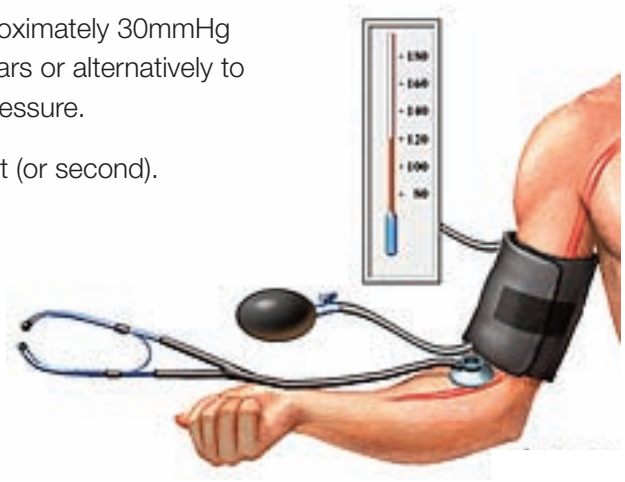
* Time of day
* Mental state
* Physical state
* Stress
* Eating, smoking, etc.



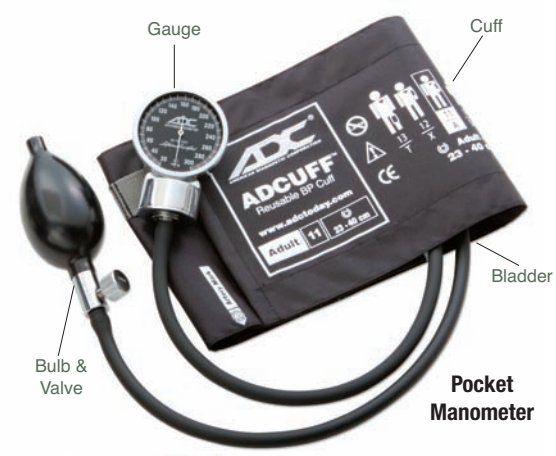
Measurement Technique

Indirect blood pressure measurement is typically performed on the left arm of the patient while in a sitting or reclining position. The arm should be slightly flexed and supported by a smooth, firm, flat surface. The "measuring" arm (upper portion) should be level with the heart. Feet should be resting on a flat surface where possible, but at the very least not crossed or flexed. Patient should sit quietly for 2 to 3 minutes prior to measurement. Patient should not eat, drink, smoke or even chew gum during measurement.

1. Apply the cuff evenly and snugly, but without constricting the limb. The lower edge of the cuff should be approximately 1" above the antecubital fold in the arm.
2. Palpate the radial artery and inflate the cuff to approximately 30mmHg ABOVE the point at which the radial pulse disappears or alternatively to 30mmHg above the known or expected systolic pressure.
3. Deflate the cuff at a rate of 2-3mmHg per heartbeat (or second).
4. Observe the pressure at the point when Korotkoff sounds are first detected. This is the systolic pressure.
5. Note the pressure within the cuff at the moment when the Korotkoff sounds finally disappear. This is the diastolic pressure.



THE EQUIPMENT



The manual indirect measurement of blood pressure (often called auscultatory method) requires the utilization of two devices. The first device, the sphygmomanometer, is used to measure the air pressure applied to the limb. The second device, the stethoscope, is used to listen to the sounds produced during the compression and decompression of the artery within the limb. ONLY together, can blood pressure be measured (automated instruments incorporate both a pressure measuring device, and a type of listening device).

The sphygmomanometer is actually a system of components consisting of:

- manometer (gauge)

Inflation system which itself consists of:

- cuff
- bladder (often integrated into the cuff)
- bulb
- valves
- carrying case (portable models only)

Manometers fall into two basic categories:

- aneroid
- mercurial

The photo (above), illustrates a typical pocket aneroid sphygmomanometer. The mercurial instrument uses a manometer with a tube calibrated in millimeters of mercury (mmHg). Mercury contained within a reservoir is forced upward into the tube. Because mercurial units are based on gravity, once properly calibrated at the factory, they will essentially remain in calibration indefinitely (so long as the amount of liquid mercury doesn't change).

Parts of Aneroid Movement

The aneroid instrument uses a manometer with a mechanical or even digital "movement". The traditional mechanical movement consists of bellows, gears, hair spring, and indicator needle. In 2004 Welch Allyn® developed a more advanced aneroid movement that functions without gears and a hair spring making it more shock resistant. In 2006 ADC introduced the first digital movement that eliminated all mechanical linkages making it virtually unbreakable.

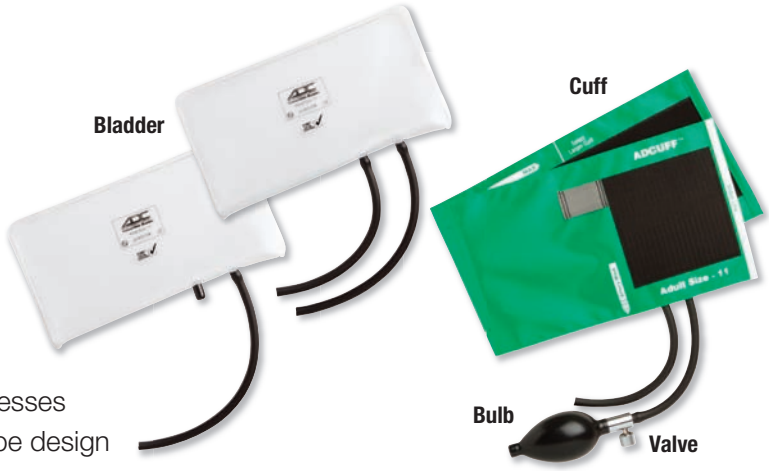
Because an aneroid movement is mechanical (except for the digital type), it is subject to shock and vibration, and will eventually wear out though some movement technologies are more rugged than others.

There are three aneroid manometer styles

- pocket style - the most popular
- palm or one hand style (with integrated bulb and valve) – ideally suited for multi-cuff solutions.
- clock style - for wall or rolling (mobile) units

Note: A mercurial instrument is no more accurate than an aneroid. By law, both must be accurate to within 3 mmHg of a reference standard (a unit of known accuracy). However, over time, mercurial units tend to be more reliable, because their accuracy will not deteriorate with age.

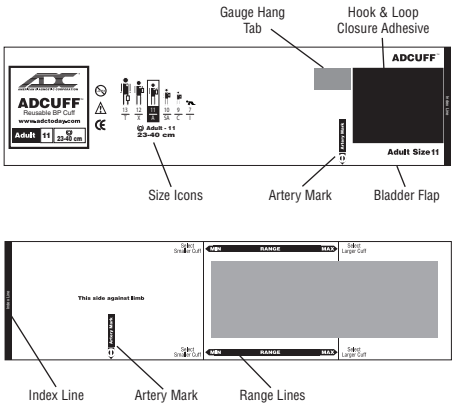
INFLATION SYSTEM COMPONENTS



The inflation system components have evolved significantly over the past decade. Historically, they included a bladder, cuff, and bulb and valve assembly.

The bladder was typically made from latex or latex-free neoprene which, when inflated, compresses the artery. The bladder has a single or double tube design depending upon the type of manometer it is connected to (most mechanical units use a double tube design). In 2011 ADC introduced a PVC bladder making its line the first value priced line to consolidate latex and latex-free offerings into a single latex-free line. ADC also made their bladder convertible – that is, it can be made into either a single tube (for palm type aneroids) or two tube (for pocket and clock aneroids) further reducing the number of skus required to offer a complete comprehensive product line.

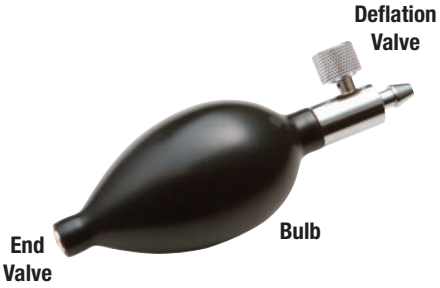
Some firms, particularly those in the acute care sector integrated the bladder and cuff into a single one piece "bladderless" cuff in order to improve usability and facilitate cleaning. These styles tend to be most popular in institutional settings where ease of cleaning outweighs patient comfort.



Anatomy of the ADC Adcuff

To hold the bladder against the limb, it is contained in a non elastic cloth or nylon cuff. The cuff is secured to the limb using hook and loop adhesive. Markings on the cuff facilitate proper positioning of the cuff – essential to accurate measurements.

A squeeze bulb with a one way end valve (check valve) forces the air into the bladder, and refills by drawing in outside air. The end valve controls the movement of air in the desired direction.



A deflation control valve regulates the release of air from the system. The AHA recommends a deflation rate of 2-3mmHg/sec.

To obtain an accurate measurement, it is critical that the cuff and bladder be properly sized for the intended patient. Most manufacturers offer a minimum of 6 and as many as 8 sizes with some even offering 11.

There are MANY variations on these components – styles, materials, designs, and colors to suit diagnostic requirements, budget, or personal taste.

Note about Latex: Until the early 90's the bladder and bulb were made almost exclusively of latex. Because of latex allergy concerns alternative materials were offered – most notably neoprene. Some manufacturers (typically those with a strong acute care presence or those that manufactured automated NIBP monitors) eliminated the latex options altogether. Others, like ADC, because of the premium price of suitable latex-free components continued to offer both. Today, ADC's line is entirely latex-free.

Students typically purchase Palm or Pocket Aneroid types
so we will discuss only these options in this primer.

SPHYGMOMANOMETER, Palm Aneroid (Blood Pressure Instrument)

The palm aneroid is the most popular platform in situations requiring rapid selection of the appropriate cuff (triage, EMS, etc). Because a palm type manometer has an integrated bulb and valve assembly there is only a single connection to the cuff/bladder assembly. ADC offers a number of models with our Diagnostix 804 series palm aneroid, including 4 multicuff models in over a dozen options.

The most important features are:

- Manometer accuracy/durability
- Cuff markings
- Valve performance
- Extensive System and Calibration warranties

Feature	Benefit
Nissei Engineered Gauges	Asia's finest gauge manufacturer produces exclusively for ADC
Individual Inspection 100% for zero point, 15% (depending on model) for accuracy to ANSI SP10. Rated to 30k+ cycles	Assures Zero Point compliance, reduces "out of the box" defect rates to less than .01%. Durability unsurpassed by any traditional mechanical gauge
Extended scale plate, luminescent dial	Extended scaleplate eliminates parallax, luminescent dial for easy reading in all light conditions
Lifetime calibration warranty	Provides for a lifetime of use
ADCUFF with properly positioned artery mark, and extensive marking system	Facilitates proper cuff positioning, minimizes miscuffing for optimal measurements
Hook and loop adhesive rated to 30k cycles	For a lifetime of use
Latex-Free design	For patient and professional safety
3 year inflation system warranty	For peace of mind
Assembled in the U.S.A.	Ensures the very highest quality and consistency
Inspected and packaged in the U.S.A.	For better quality control. Brings work "home" to U.S. citizens

SPHYGMOMANOMETER, Pocket Aneroid (Blood Pressure Instrument)

The basic pocket aneroid is the most popular device for the professional measurement of patient blood pressure. Available in a number of models to suit the needs and budgets of the healthcare professional. ADC's 3 primary models all use the ADCUFF latex-free cuff and bladder which features the industry's most comprehensive marking system (Size Guide™). Units differ only in the manometer and inflation bulb & valve assembly.

The most important features are:

- Manometer accuracy/durability
- Valve performance
- ADCUFF markings
- Extensive System and Calibration warranties

Feature	Benefit
Nissei Engineered Gauges	Asia's finest gauge manufacturer produces exclusively for ADC
Individual Inspection 100% for zero point, 15% (depending on model) for accuracy to ANSI SP10. Rated to 30k+ cycles	Assures Zero Point compliance, reduces "out of the box" defect rates to less than .01%. Durability unsurpassed by any traditional mechanical gauge
Top of the line 800 series manometer with extended scaleplate, luminescent dial, and chrome plated housing, Lifetime cal warranty	Extended scaleplate eliminates parallax, luminescent dial for easy reading in all light conditions, chrome plated housing is more durable and attractive
Premium model 802 series features extended scaleplate and white on black dial face and red needle. Lifetime cal warranty	Extended scaleplate eliminates parallax, white on black is easier to read
Standard model 808N series features traditional black on white dial face. 20 year cal warranty	Calibration warranty provides peace of mind
ADCUFF with properly positioned artery mark, and extensive marking system	Facilitates proper cuff positioning, minimizes miscuffing for optimal measurements
Hook and loop adhesive rated to 30k cycles	For a lifetime of use
Latex-Free design	For patient and professional safety
3 year Inflation system warranty	For peace of mind
ADFLOW bulb and valve (with 800 and 802 series gauges) features filter screen protection and microthreading	Filter screens enhance durability, microthreading improves deflation control
Every valve leak tested at the factory, up to 10% retested at our facility	To ensure compliance with ANSI SP10
Assembled in the U.S.A.	Ensures the very highest quality and consistency
Inspected and packaged in the U.S.A.	For better quality control. Brings work "home" to U.S. citizens

700 Series

720 Series

760 Series

SPHYGMOMANOMETER, Digital Pocket Aneroid (Blood Pressure Instrument)

Retains all of the features of our legendary pocket aneroids PLUS:

- Its virtually indestructible
- Easy to Read

Feature	Benefit
Virtually indestructible design	Not just shock resistant. Virtually unbreakable. If it EVER is broken or goes out of calibration it will be repaired or replaced free of charge
Easy to read LCD (liquid crystal display) with 7/8” digits for easy reading	Easier to read than traditional gauges
Back lit display	For use in all light conditions
Deflation rate indicator	Promotes proper technique. Ideal for training
Systolic Assist display	Alerts the observer to the onset of systolic pressure – another great training aid
Battery strength indicator	Alerts the user to change battery
Calibration reminder	Alerts the user when to have the unit checked for accuracy or when calibration is needed
Uses 2 “AAA” batteries (provided)	Readily available, inexpensive
Works with all traditional 2 tube systems	Convenient

Penlights - Examination

Penlights are pocket sized flashlights designed to assist the practitioner in evaluating puplillary response to light (which could be an indicator of brain injury, or some other impairment); to examine the soft tissue around the eyes or to test for consensual pupillary reflex.

Diagnostic penlights are typically powered by “AAA” or “AA” batteries and are activated by a combination pocket clip/power switch, or, in more expensive models, a separate power switch – typically a plunger type. Lamps can be incandescent, halogen, or even LED.

ADC offers one of the widest selections of diagnostic penlights – from disposable models available in a number of colors, to reusable models produced at a number of price points. All are marketed under the ADlite brand. Our ADlite Pro is our top of the line instrument - an LED penlight machined from solid brass with a reverse plunger switch that prevents accidental illumination.

Feature/Model	352	353	354	355	356
Low Cost Disposable					X
Pocket Clip Activated			X		X
Separate Power Switch	X	X		X	
Slide Switch to Prevent Accidental Lighting				X	
Replaceable Batteries	X	X	X	X	
Multiple Color Options	X	X	X		X
Plastic Housing			X		X
Aluminum	X	X			
Machined Brass				X	
Illumination	INCAN	INCAN	INCAN	LED	INCAN
Warranty	1YR	1 YR	1YR	LIFETIME (on Lamp) 2YR (on Penlight)	1YR

NEURO HAMMERS and INSTRUMENTS

Neurological hammers and related instruments are designed to assist the practitioner in performing a variety of neurological function tests on the patient. Among the most popular neuro instruments are reflex hammers which are offered in a variety of patterns or designs; and tuning forks which are available in a number of frequencies.

3695
Wartenberg Wheel

3691
Buck Hammer

Reflex Hammers

The most popular reflex hammer designs are the Taylor Hammer with its triangular rubber-like head, the Buck with multiple heads/attachments, and Babinski and Queen's Square with their circular head designs. The Wartenberg pinwheel is designed to test nerve sensitivity at the extremities. The Buck model has the most functionality with two rubber heads, a brush and a concealed needle. The basic Taylor model is the most popular.

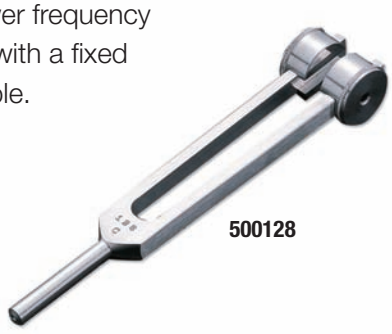
3693BK
Taylor Hammer

3699BK
Queen's Square Hammer

Tuning Forks

Tuning forks are used to conduct both hearing and neurological tests depending upon the frequency. Frequency is a measure of the vibrations per second in hertz (Hz) Popular tuning fork frequencies are 128Hz & 256Hz – used primarily in neurological tests. The higher frequency models - 512, 1024, 2048 and 4096 are used primarily for hearing tests. The frequency is inversely proportional to the size of the fork – that is the higher frequencies are smaller in size. The lower frequency forks (128Hz & 256Hz) are typically equipped with a fixed weight to allow their size to be kept manageable.

Tuning forks are typically made in 2 grades - Student, and the better Medical Grade. ADC produces Medical Grade forks, accurate to .5% of frequency. Machined from aluminum alloy.



500128

500256

500512

501024

502048

504096

EENT (Diagnostic Instruments)

EENT (Eyes, Ears, Nose and Throat) instruments, often called diagnostic instruments, are used to permit visual examination of the eyes, ears, nose and throat. They are handheld instruments that consist of a handle/power source and instrument head. The instrument head contains a lamp. The lamp can be incandescent, xenon, halogen or even LED.

The power source can be A/C with the handle connected via a coiled extension cord to the wall, or portable with a battery handle. Battery handles can use alkaline or rechargeable batteries. On more advanced instruments the handles employ a rheostatic power switch that allows the operator to vary the intensity of the lamp. Smaller pocket models typically offer only an on/off slide switch.

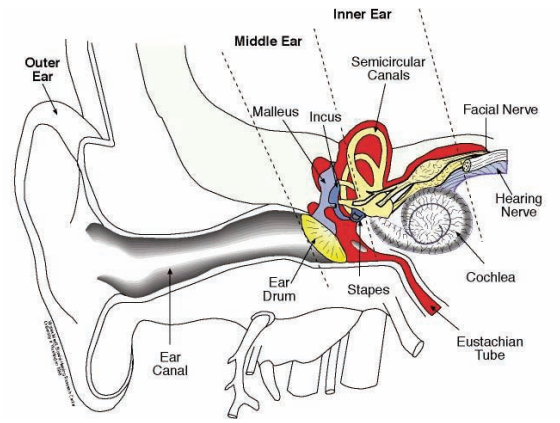
Voltage: Basic instruments typically use 2.5v systems powered by alkaline batteries. Wall and rechargeable systems typically employ 3.5v power supplies and lamps. The extra power provides a brighter, longer lasting light for better visualization.

Sizes/configurations: Although there are many variations, the instruments often come in two basic designs. Wall mounted and portable. Portable sets may be full or "pocket" sized. Medical students typically purchase the portable sets either in full or pocket, depending upon their curriculum and budget.

Wall Mount

Portable Full Size

Portable Pocket Size



OTOSCOPE:

The ears, nose and throat are typically examined using an Otoscope, often with additional attachments for the different examinations. A basic Otoscope is designed for examination of the inner ear. Reusable, or more commonly, disposable ear speculum with varying diameters facilitate the aural exam. The instrument head typically has a removable magnifying lens at the practitioner side of the instrument. Most also have a port (hole) to allow insufflation using an optional insufflator bulb.

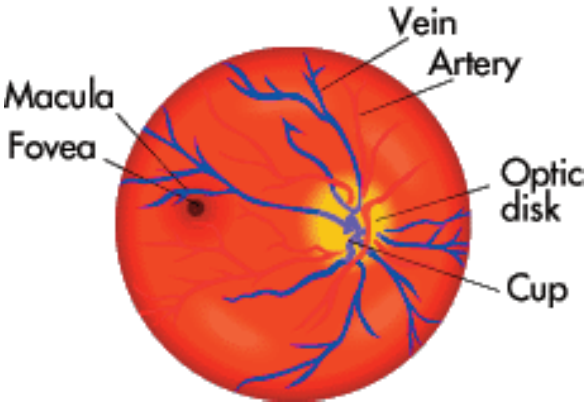
With a nasal speculum attachment the otoscope can be used to examine the nasal cavity. A throat illuminator attachment or separate otolaryngeal attachment facilitates examination of the oral cavity.

OPHTHALMOSCOPE:

The Ophthalmoscope allows a health professional to see inside the fundus of the eye and other structures. It is done as part of an eye examination and may be done as part of a routine physical examination. It is crucial in determining the health of the retina and the vitreous humor. A typical ophthalmoscope instrument head contains at least 2 controls. More feature rich models may have 1 or 2 additional control surfaces. The basic control is the focus wheel. This allows the practitioner to compensate for the patient's visual condition, much the way eyeglasses correct. The focus, or lens wheel has a number of positive and negative lenses measured in diopters. The range is often from +40 to -40. Models have as many as 40 or more lenses though most have under 30. Smaller pocket models typically have fewer than 20. The greater the number of wheels the better the focus. Advanced models have a variable focus wheel which allows for infinite adjustment.

The second control wheel is the aperture wheel which regulates the light image projected onto the retina. Typical options include a large spot, small spot, half moon, and graduated (marked with calibrations). Red free filters (on some models the filters are separate aperture options, on more advanced models they are overlays on the basic apertures)

Welch Allyn® is the recognized leader in EENT instruments. ADC offers a high quality line at a fraction of the price of the WA product. ADC's Otoscopes are designed to work with the WA specula which are ubiquitous in the physician's office. (many other competing brands require their own incompatible and often more costly speculum).



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