

## TSD120 Blood Pressure Cuff



TSD120



RX120A and RX120F cuff options

### Blood Pressure Measurement

The most common form of indirect blood pressure measurement employs a pressure cuff, pump and pressure transducer. This complete assembly is commonly referred to as a *sphygmomanometer*.

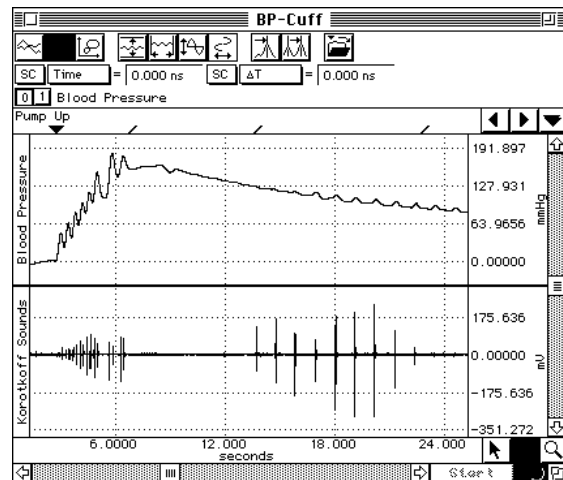
Typically, the cuff is wrapped around the upper arm and is inflated to a pressure exceeding that of the brachial artery. This amount of pressure collapses the artery and stops the flow of blood to the arm. The pressure of the cuff is slowly reduced as the pressure transducer monitors the pressure in the cuff. As the pressure drops, it will eventually match the systolic (peak) arterial pressure. At this point, the blood is able to “squirt” through the brachial artery. This squirting results in turbulence that creates the Korotkoff sounds. The Korotkoff sounds are detected using a TSD108 physiological sounds transducer (see page 53). The cuff pressure continues to drop, and the pressure eventually matches the diastolic pressure of the artery. At that point, the Korotkoff sounds stop completely, because the blood is now flowing unrestricted through the artery.

The following graph illustrates a typical recording using the TSD120 and TSD108.

The TSD120 pressure signal was recorded via a DA100C amplifier set to DC, 10Hz LP and a gain of 200.

The TSD108 Korotkoff signal was recorded by a DA100C amplifier set to .05Hz HP, 300Hz LP and a gain of 50 to 200.

The signal for the TSD108 was further conditioned by the AcqKnowledge software.



Cuff Blood Pressure Versus Korotkoff Sounds

In a calculation channel, the TSD108 signal is bandpass filtered from 50 to 200Hz. Accordingly, the sampling rate for the entire recording needs to be about 600Hz, assuming the TSD108 transducer is used.

As the cuff is wrapped around the upper arm of the subject, be sure to place the TSD108 transducer **underneath** the blood pressure cuff, **directly over the brachial artery**. TSD108 placement is very important to get the best possible recordings of Korotkoff sounds. Finish wrapping the cuff around the upper arm and secure it with the Velcro® seal. Now, start inflating the cuff with the pump bulb.

The pressure trace shows the hand pump driving the cuff pressure up to about 150 mmHg. Then the cuff pressure is slowly released by adjusting the pump bulb deflation orifice. Notice that the Korotkoff sounds begin appearing when the cuff pressure drops to about 125 mmHg (bottom trace). As the pressure continues to drop, the Korotkoff sounds eventually disappear, at about 85 mmHg. The **systolic pressure** would be identified at 125 mmHg and the **diastolic pressure** would be 85 mmHg.

### TSD120 Calibration

The TSD120's built-in pressure transducer will require an initial calibration prior to use. To calibrate the transducer, wrap the cuff into a roll and begin to inflate the cuff slowly with the pump bulb. You will notice the pressure change on the mechanical indicator. Set the cuff pressure to one lower pressure (typically 20 mmHg) and then one higher pressure (typically 100 mmHg). In this manner you can calibrate the pressure transducer using the standard procedure in the SCALING dialog (in *AcqKnowledge*). To use the cuff at a future date, simply save the calibration settings in a stored file. Also see DA100C Calibration options on page 38.

### TSD120 Blood Pressure Cuff Specifications

Pressure range:	20 mmHg to 300 mmHg
Manometer accuracy:	±3 mmHg
Output:	5 µV/mmHg (normalized to 1V excitation)
Cuff circumference range:	25.4 cm to 40.6 cm (as shipped with RX120D; cuff is switchable)
Cuff Dimensions:	14.5cm (wide) x 54cm (long)
Weight:	350 grams
Cable Length:	3 meters, shielded
Interface:	DA100C

### **RX120 SERIES Blood Pressure Cuffs for the TSD120**

The RX120 series are optional blood pressure cuffs, of varying sizes, which can be quickly and easily swapped in and out of the TSD120 noninvasive blood pressure cuff transducer. Use a single TSD120 and substitute one cuff for another to accommodate a wide range in limb circumferences.

### RX120 Specifications

<b>Cuff</b>	<b>Circumference Range (cm)</b>	<b>Width (cm)</b>	<b>Length (cm)</b>
RX120A	9.5-13.5	5.2	18.5
RX120B	13.0-19.0	7.5	26.1
RX120C	18.4-26.7	10.5	34.2
RX120D	25.4-40.6	14.5	54.0
RX120E	34.3-50.8	17.6	63.3
RX120F	40.6-66.0	21.0	82.5