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SpiroFlow™

Peak Flow Meter

INSTRUCTION MANUAL



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Introduction

You are using the **SpiroFlow™** manufactured by Spirometrics. This monitor meets all the technical standards established by the National Asthma Education and Prevention Program and other international standards.

Your **SpiroFlow™** was designed for use by patients having a peak flow between approximately 300 and 800 liters per minute. If your peak flow is below 370 liters per minute, you should use the Children's version of the **SpiroFlow™**.

The 1997 National Heart Lung and Blood Institute in the National Asthma Education and Prevention Program recommended that individuals age five and older with moderate or severe asthma monitor peak flow. Peak flow may NOT be used to completely evaluate lung function.

The **SpiroFlow™** measures peak expiratory flow (PEF), which is a valuable indicator of lung function and changes in your asthma. A peak flow meter may be used to check your asthma like a blood pressure cuff is used to check high blood pressure.

In order to help your physician provide the most appropriate treatment, proper use of the **SpiroFlow™** is essential.

Note: A physician should be involved in the initiation of home peak flow monitoring. Persons with cardiovascular or respiratory diseases should not use the **SpiroFlow™** unless under the care of a physician.

What does peak flow measure?

Your *peak flow* is the flow that you can achieve when blowing out as fast as possible after breathing in as much air as possible. Your **best** peak flow or *Best Effort* is **unique to you** and will be determined with the assistance of your doctor or respiratory therapist.

Why should I use a Peak Flow Meter?

Asthma may cause the airways to narrow and limit how well you can get the air out of the lungs. Your peak flow may help to make you aware of these changes before you feel poorly. It is important to monitor your symptoms and changes in peak flow. Monitoring changes in your lung function will help you know when your asthma is changing. Many times medications can be taken before symptoms worsen. It may also help you avoid a serious asthma episode.

Your doctor can further explain the importance of measuring your peak flow. Knowledge of your normal or near normal peak flow, or at least being able to achieve your best possible result as a response to therapy, can give you security in the knowledge that you are as good as you can be.

How does monitoring peak flow improve my asthma care?

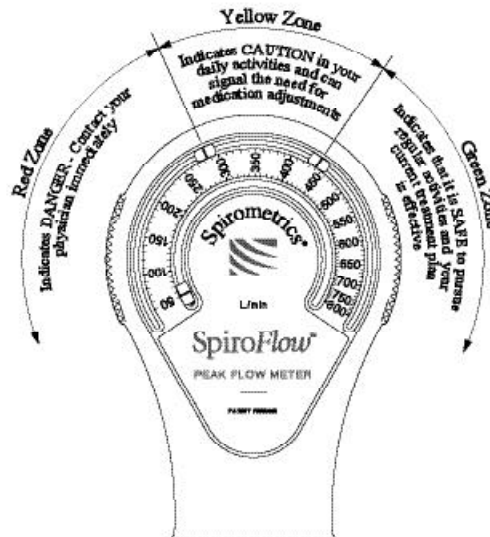
Monitoring peak flow helps your physician and other health care providers evaluate how well your asthma is being controlled. Always take the peak flow meter and daily recorder chart to doctor appointments.

If you need to go to an emergency room or urgent care, always take your peak flow meter and daily recorder chart. It provides valuable information when treating asthma symptoms or acute episodes.

How to setup the SpiroFlow™

Note: Your asthma educator or physician may be able to assist you.
(Your Best Effort and Zone settings may differ from this example.)

- Once you have obtained your Best Effort reading from your physician, determine your “Zone” indicator settings according to the following:
 - **Red Zone** - 50% of Best Effort and below. Example:
For a Best Effort of 550, set your Red Zone indicator to $275 = 550 \times 50\%$.
 - **Green Zone** - 80% of Best Effort and above. Example:
For a Best Effort of 550, set your Green Zone indicator to $440 = 550 \times 80\%$.
 - **Yellow Zone** - 50% to 80% of Best Effort or between your Green Zone indicator and your Red Zone indicator.
- Use a pen or similar item to move the Zone indicators to the positions determined above.
- Your SpiroFlow™ is now ready for use!



- Setup your peak flow chart by recording your Name, Date and Zone indicator settings as shown below:
- Perform your tests as prescribed and record the test results in your chart. Record the date, hour, and if you took medication along with the reading.

Fill in the box above the line of your reading.

The image displays a Peak Flow Chart and a corresponding Peak Flow Table. The chart features a grid with a vertical axis for flow rate (50 to 850) and a horizontal axis for days of the week. A patient's peak flow readings are plotted as red dots, with a red line connecting the highest points for each day. The chart is divided into three zones: Green (600-850), Yellow (350-600), and Red (50-350). A callout box points to a reading of 360 in the Yellow zone, stating "This example chart is based on a Best Effort of 550".

Date	Time	Reading	Med
2/15	9 am	530	
2/15	2 pm	500	
2/15	5 pm	470	
2/16	7 am	470	
2/16	9 am	510	
2/16	2 pm	490	
2/16	5 pm	560	
2/17	7 am	500	
2/17	9 am	470	
2/17	2 pm	490	
2/17	5 pm	470	
2/18	7 am	470	
2/18	9 am	470	
2/18	2 pm	470	
2/18	5 pm	470	
2/19	7 am	470	
2/19	9 am	470	
2/19	2 pm	470	
2/19	5 pm	470	
2/20	7 am	470	
2/20	9 am	470	
2/20	2 pm	470	
2/20	5 pm	470	
2/21	7 am	470	
2/21	9 am	470	
2/21	2 pm	470	
2/21	5 pm	470	

Spirometrics
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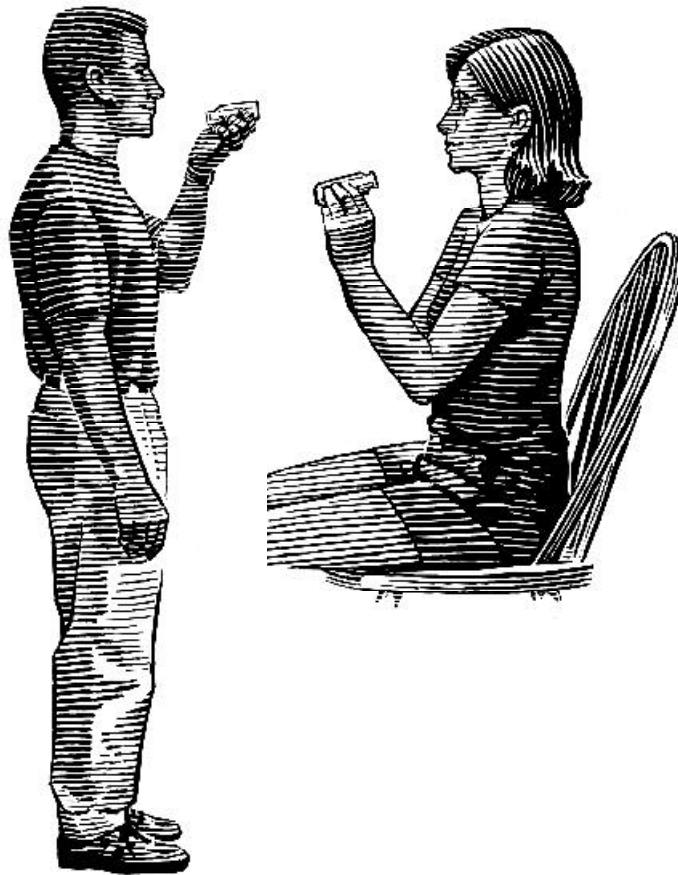
Notes
DATE: 2/15/2008
TIME: 9:00 AM
ZONE: GREEN

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How to use the SpiroFlow™

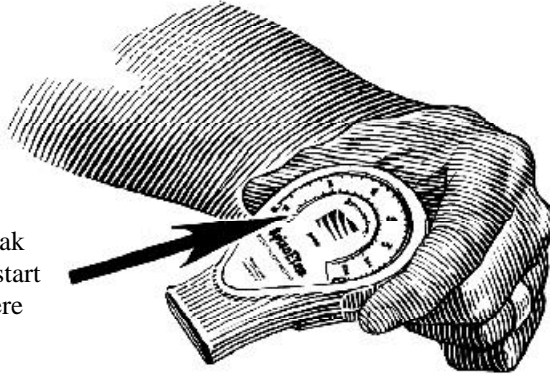
Step One:

Your mouth must be empty. For best results, you should stand.
If you are unable to stand, sit-up straight.



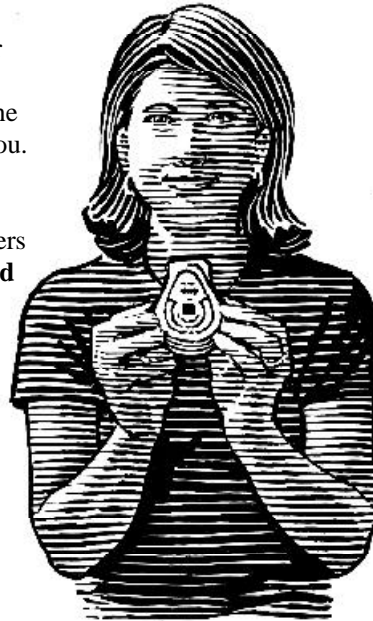
Step Two:

Move the Peak Indicator to start position where shown.



Step Three:

Hold the *SpiroFlow™* in your hand with your thumb and forefinger on the grips and the mouthpiece facing toward you. If preferred, you may opt to hold the device with both thumbs underneath and fingers on the grips as shown. **Avoid blocking the vent holes as much as possible and do not allow fingers to interfere with the red Peak Indicator.**



Step Four:

Take as deep a breath as possible filling your lungs completely with air.



Step Five:

Place your mouth on the mouthpiece, past your teeth and form a tight seal with your lips. Place your tongue below the mouthpiece. Make sure your tongue is not blocking the opening at any time.

Step Six:

Blow out as **HARD** and **FAST** as you can. This will cause the indicator to move and indicate your peak flow. Do not spit or cough into the device. If this occurs, repeat the test from Step Two.



Step Seven:

Do not reset peak indicator. Repeat Steps Four through Six two more times for a total of three maneuvers. The indicator will automatically point to the best of the three efforts.

Step Eight:

Once you have completed three maneuvers, record your best effort on your “Daily Recorder Chart” provided with your **SpiroFlow™**. The line or arrow in the middle of the Peak Indicator points to your result.



What is my Best Effort peak flow?

Your physician, asthma coordinator/counselor, nurse or respiratory therapist should establish threshold or target values including your Best Effort peak flow. Once the targets are determined, your physician will use the information to write an asthma management plan based on your needs.

What should I do when my peak flow changes?

It is important to develop an asthma management plan in partnership with your physician. Your physician’s advice should be followed to make changes in your asthma care based on the peak flow results and symptoms.

Caring for your SpiroFlow™

Always take your peak flow meter with you when scheduled for breathing tests. The National Asthma Education and Prevention Program guidelines recommend comparing peak flow and spirometry at least once each year.

The **SpiroFlow™** is for single patient use, therefore it is not necessary to clean it after each use. Once a week should be sufficient.

The **SpiroFlow™** is dishwasher safe. Make sure it is placed in the silverware basket. Take care to not allow any items to go inside the unit and turn off drying heat if possible.

You may also wash the **SpiroFlow™** in warm soapy water. Rinse well, shake out any excess water and let it dry before next use.

The **SpiroFlow™** was designed to last at least one year. Examine your **SpiroFlow™** occasionally to make sure it is operating properly.

Ensure that there is no food or other debris in the unit after cleaning and before each use.

If you have cleaned your **SpiroFlow™** as described above and still obtain unusual readings or suspect that your **SpiroFlow™** may not be working properly check the following:

The red peak indicator should not be loose or move when the **SpiroFlow™** is tilted from side to side without shaking.

The red peak indicator should move freely when pushed with your finger or some other soft object.

If either condition above is not met, or you still suspect malfunction, please refer to our warranty policy later in this manual.

Normal Predicted Average Peak Expiratory Flow

This page and the next contain tables of average peak flows based on tests of large numbers of people. The peak flow for an individual can vary widely. Individuals at altitudes above sea level should be aware that peak flow readings may be lower than those provided in the tables. Please apply the appropriate altitude correction factor shown later in this manual.

NHANES III*												
PEAK EXPIRATORY FLOW RATE [liters/minute]												
Age [yrs]	Caucasian Males (8-80 yrs)						Caucasian Females (8-80 yrs)					
	Height [inches (cm)]						Height [inches (cm)]					
	50 (127)	55 (140)	60 (152)	65 (165)	70 (178)	75 (191)	45 (114)	50 (127)	55 (140)	60 (152)	65 (165)	70 (178)
8	197	248	303	364	429	499	155	190	227	269	314	363
10	210	261	317	377	442	512	192	226	264	305	350	399
15	272	323	378	439	504	574	247	282	319	361	406	455
20	373	423	479	539	605	675	260	294	332	374	419	467
25	380	431	486	547	612	682	267	301	339	380	425	474
30	383	434	490	550	615	685	271	305	343	384	429	478
35	383	434	489	549	615	685	271	306	343	385	430	479
40	378	429	485	545	610	680	269	303	341	382	427	476
45	370	421	476	537	602	672	263	298	335	377	422	471
50	358	408	464	524	590	660	255	289	327	368	413	462
55	342	392	448	508	573	644	243	277	315	357	402	450
60	321	372	428	488	553	623	228	263	300	342	387	436
65	298	348	404	464	529	599	210	245	283	324	369	418
70	270	320	376	436	502	572	189	224	262	303	348	397
80	202	253	308	369	434	504	138	173	210	252	297	346

NHANES III*

PEAK EXPIRATORY FLOW RATE [liters/minute]

Age [yrs]	African-American Males (8-80 yrs)						African-American Females(8-80 yrs)					
	Height [inches (cm)]						Height [inches (cm)]					
	50 (127)	55 (140)	60 (152)	65 (165)	70 (178)	75 (191)	45 (114)	50 (127)	55 (140)	60 (152)	65 (165)	70 (178)
8	184	239	300	366	438	514	159	195	235	279	327	379
10	190	245	306	372	443	520	179	215	255	299	347	398
15	242	298	358	425	496	573	228	264	304	348	396	448
20	349	405	465	532	603	680	258	294	334	378	426	477
25	337	392	453	519	591	667	256	293	333	377	425	476
30	325	380	441	507	579	655	253	289	329	373	421	473
35	312	368	429	495	566	643	247	283	323	367	415	467
40	300	356	416	483	554	631	238	274	314	358	406	458
45	288	343	404	470	542	618	227	263	303	347	395	447
50	276	331	392	458	530	606	213	249	289	333	381	433
55	263	319	380	446	517	594	197	233	273	317	365	417
60	251	307	367	434	505	582	178	214	254	298	346	405
65	239	294	355	421	493	569	157	193	233	277	325	376
70	227	282	343	409	481	557	133	169	209	253	301	352
80	202	258	319	385	456	533	77	113	154	197	245	297

Age [yrs]	Mexican-American Males (8-80 yrs)						Mexican-American Females (8-80 yrs)					
	Height [inches (cm)]						Height [inches (cm)]					
	50 (127)	55 (140)	60 (152)	65 (165)	70 (178)	75 (191)	45 (114)	50 (127)	55 (140)	60 (152)	65 (165)	70 (178)
8	197	258	326	399	478	563	156	197	242	291	345	403
10	205	266	334	407	486	571	185	225	271	320	374	432
15	255	316	384	457	536	621	228	269	314	363	417	475
20	348	410	477	550	629	714	238	279	324	373	427	485
25	352	413	481	554	633	718	243	284	329	378	432	490
30	352	413	481	554	633	718	244	285	330	380	433	491
35	348	410	477	550	629	714	243	284	329	378	432	490
40	341	403	470	543	622	707	238	279	324	374	427	486
45	330	392	459	532	611	696	231	272	317	366	420	478
50	316	378	445	518	597	682	220	261	306	356	409	467
55	298	360	427	500	579	664	207	247	292	342	396	454
60	277	338	405	479	558	642	190	231	276	325	379	437
65	252	313	380	454	533	617	170	211	256	305	359	417
70	223	284	352	425	504	589	147	188	233	282	336	394
80	155	216	284	357	436	521	92	133	178	227	281	339

* Hankinson J, Odencrantz J, Fedan K: Spirometrics Reference Values from a Sample of the General U.S. Population (NHANES III). Am J Respir Crit Care Med 1999;159:179-187.

Temperature and Altitude Effects

Your **SpiroFlow™** was designed for use within the temperature range indicated on the next page under “Performance Specifications”. Outside this temperature range your device may not be accurate.

Your **SpiroFlow™** and all similar devices are also affected by altitude. Your readings do not require correction when you use your **SpiroFlow™** at sea level. Your readings will be lower when you use your **SpiroFlow™** at higher altitudes and will require correction. Follow the instructions below to correct for the effects of altitude on your peak flow readings.

Altitude Correction

In the adjacent chart find the row with the reading that is closest to your peak flow and the column with the altitude that is closest to your current altitude. Add the correction value located where this row and this column meet to your measured peak flow to obtain your true, altitude corrected, peak flow.

Record this value in your peak flow chart as appropriate.

ALTITUDE CORRECTION VALUES					
PEAK FLOW READING [liters/min]	ALTITUDE [feet]				
	1000	2000	3000	4000	5000
100	2	3	5	7	8
150	3	5	8	10	13
200	3	7	10	13	17
250	4	8	13	17	21
300	5	10	15	20	25
350	6	12	18	23	29
400	7	13	20	27	33
450	8	15	23	30	38
500	8	17	25	33	42
550	9	18	28	37	46
600	10	20	30	40	50
650	11	22	33	43	54
700	12	23	35	47	58
750	13	25	38	50	63
800	13	27	40	53	67

Web Sites about Asthma

National Asthma Education and Prevention Program (NAEPP)
NHLBI Information Center
www.nhlbi.nih.gov/about/naepp

Allergy and Asthma Network - Mothers of Asthmatics, Inc.
www.aanma.org

Asthma and Schools
www.asthmaandschools.org

National Jewish Medical and Research Center
www.njc.org

American Association for Respiratory Care
www.aarc.org

Warranty

The **SpiroFlow™** comes with a one-year replacement warranty.

If your **SpiroFlow™** is not operating properly, contact Spirometrics® and do not use the damaged meter.

Performance Specifications

This device meets the requirements of the following standards:

Standardization of Spirometry, 1994 Update; American Thoracic Society (ATS)

Statement on Technical Standards for Peak Flow Meters; January, 1991; National Heart, Lung and Blood Institute

Respiratory Therapy Equipment - Peak Expiratory Flow Meters; September, 1994; Australian/New Zealand Standard

Peak expiratory flow meters, BS EN 13826:2003, European Committee for Standardization

Scale (Display): 50 to 800 liters / minute @ BTPS

Accuracy: ±7.5% or ±10 liters / minute

**Repeatability: ±5% or ±10 liters / minute whichever is greater
Does not exceed 20 liters / minute**

Flow Resistance: 32 cm of water @ 800 liters / minute

Environmental Conditions for Use:

10 to 50 °C and 0 to 100% Relative Humidity

Storage Requirements:

-40 to 70 °C and 0 to 75% Relative Humidity

REORDER INFORMATION

2350 **SpiroFlow™ Peak Flow Meter**
20058 Peak Flow Chart only

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