DISPOSABLE SPIROMETER SYSTEM
SINGLE PATIENT USE ONLY

DISPIRO™

CONTENTS: (As per marked chart on reversed side)

APPLICATIONS:

DISPIRO™, Disposable Spirometer, is used at the bedside to accurately measure pulmonary variables associated with screening, monitoring and weaning patients. Because of its unique design, Dispiro replaces the less efficient and non-disposable equipment usually associated with respiratory care. It is neither temperamental nor expensive as are many other volume collection devices. With Dispiro, the clinician can easily and repeatedly monitor life support system volumes, screen patients for therapy, perform incentive spirometry and have an effective means to wean patients by accurately tracking the physiological parameters. The Dispiro can be used to determine the following pulmonary data on most patients: VT, VE, VC, FVC, VC/FVC, Inspiratory and Expiratory Pressures and even mean expiratory flow can be estimated by using a stop watch. Universal adaptors permit the above to be measured via mouth, Endotracheal Tube, Tracheostomy Tube, Intermittent Positive Pressure Breathing Machine (IPPB) or Ventilator Manifold and Tubing.

APPLICATION DETAILS:

As with any other apparatus used with a conscious, responsive patient, it is helpful to explain the Dispiro in order to insure effective cooperation. The patient should be instructed that the tests are effort-dependent but shouldn't cause any undue discomfort. Some of the tests require a nose clip to control the pathway of the inhaled or exhaled air.

In order to facilitate use, the nose clip may be affixed before commencing measurements. A mask should be used if the patient is incoherent. If a ventilator or respirator is being used, the Dispiro should be attached directly to the appropriate instrument port during the testing maneuver by utilizing the universal adaptor. **NOTE:** It is important that the Dispiro not be left on the exhalation manifold unattended or in any way be allowed to restrict the patient's exhalation.

The following application procedures assume that the patient is alert and responsive to instructions; it is also assumed that no breathing assist devices are being utilized. Appropriate changes should be made in the procedures if these assumptions are not valid.

VT Determination:
(Tidal Volume)

VT may be determined by measuring the gas inhaled or exhaled during a single normal breathing cycle. However, to minimize measurement errors, it is generally recommended that an average determination be made over at least 10 normal cycles. Please note that the Dispiro System will work over any number of tidal volume breaths desired to be measured as long as the total accumulated volume does not exceed the bag capacity. For this test, the patient should use the nose clip. The Dispiro mouth piece is inserted and the patient is instructed to keep an adequate seal with his lips. One-way valves allow the patient to inhale air (gas) from the intake port and exhale through the exhalation valve into the calibrated collection bag. After 10 normal breathing cycles, the mouth piece is removed along with the nose clip.

There is no danger of collected volume being lost due to the one-way valve in the exhalation port. The tidal volume is determined by simply encircling the bag with the fingers of one hand while moving distally from the mouth piece. Distal movement should cease when a slight resistance is noted, since further compression of the air (gas) might result in a slight distortion of measurement. The volume in liters (ATPS) is read directly from the scale and divided by 10. This determination may be converted to BTPS if desired. Another, possibly less accurate, but faster estimated average VT can be determined by letting the bag fill to its full capacity then dividing the number of breaths that it took to fill the bag into the total bag volume. Example, for the 10 liter bag, if it took 20 breaths to fill the bag, the VT could be 500 ml. **NOTE:** The above system should be closely monitored, because when the bag is completely full, the patient can no longer exhale until the bag is removed.

VE Determination:
(Minute Ventilation)

VE may be measured with the same basic technique as used in determining VT. However, instead of averaging over 10 cycles, the air (gas) is collected over one minute. If the patient's VT is very large or if the respiration rate is high, then the volume exhaled over one minute may exceed the bag's capacity. Should this be the case, empty the bag and after a brief rest, repeat the procedure for 30 seconds and multiply the collected volume by 2.

VC Determination:
(Vital Capacity)

The VC is measured basically the same way as is the VT. The patient is asked to slowly inhale a maximum breath and then slowly exhale as completely as possible. This test may also be helpful in determining the effectiveness of pursed lip breathing by noting whether or not the patient can exhale more completely (greater collected volume) after pursing his lips during the test.

FVC Determination:
(Forced Vital Capacity)

The FVC test is performed exactly as is the VC measurement except the patient is instructed to exhale as forcibly and as quickly as possible.

VC/FVC Determination:

This ratio is easily obtained by simply dividing VC by FVC. Thus an estimate of the trapped inhaled air can be made quickly.

Inspiratory and Expiratory Pressure Determinations:

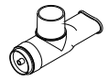
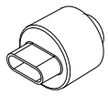
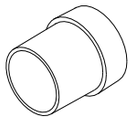
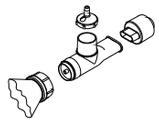
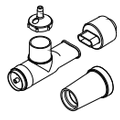
Pressure measurements require connection between a pressure monitor (electronic, H_2O, mercury manometer or mechanical) and the port connections supplied with the Dispiro, Disposable Spirometer. The port should be snapped onto the top of the mouth piece or inspiratory port for inspiratory pressure or onto the end of the mouth piece or expiratory port for positive pressure measurements. With the nose clip in place, the patient is asked to slowly exert a maximal effort to inhale or exhale. The respective pressure may be read directly from the monitor. A finger relief hole is provided for the clinician's convenience.

There are many other possible tests of physiologic variables for which the Dispiro may be used. However, the **clinician should keep in mind that this unique device is intended for a single patient use and must not be passed onto another.**

ASSEMBLY INSTRUCTION:
(See illustration below)

To assemble the Dispiro, Disposable Spirometer, place bag opening collar directly onto the outlet of the body of the device by slipping it securely onto the outlet end. The basic system is now ready for use. If the patient is on a breathing assistance machine or intubated, the universal adaptor is required. When pressure measurements are desired, refer to the "Inspiratory and Expiratory Pressure Determinations" section.

CONTENTS CHART

Illustration	Item No.	Item Enclosed	Description
	02020		DISPIRO Mouth Piece w/Double One-Way Valves
	02002		Manometer Connecting Pressure Cap w/14" Tubing
	02009		Universal Manifold & Trach Adaptor
	02010		Mouth Piece Connector
	02013		Universal Connector
	02040		22mm Connector w/One Way Valve
	02000		DISPIRO Disposable Spirometer, Standard 10 Liter Kit w/02002, 02009, 02020 & 02400
	02001		DISPIRO Disposable Spirometer, Standard 5 Liter Kit w/02002, 02009, 02020 & 02401
	02500		DISPIRO Disposable Spirometer, Standard Kit w/02002, 02009, 02010, 02020
	02400		10 Liter Calibrated Collection Bag, Assembled
	02401		5 Liter Calibrated Collection Bag, Assembled
	02451		5 Liter Calibrated Collection Bag w/Universal Connector, Unassembled, Bulk Packaged
	02460		10 Liter Calibrated Collection Bag w/22mm Connector, Unassembled, Bulk Packaged
	02461		5 Liter Calibrated Collection Bag w/22mm Connector, Unassembled, Bulk Packaged

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