Sequential Compression Device for prevention of Deep Vein Thrombosis (DVT)

It is observed that 50% of the deep vein thrombosis (DVT) begin intra-operatively, with highest incidence occurring during Surgery and on the first post Operative day and 75% of DVT develop within the first 48 hours after surgery!!

Conforming to International Standards CE & ISO

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**VARIO-EX** is a member of Biptronics’ Sequential Compression Devices family, which consists of the Vario, Vario-Flo and Vario-ExcelFlo.

**Clinical application:**
- Prevention of Deep Vain Thrombosis.
- Enhancement of venous and arterial circulation.
- Prevention of Venous Stasis.
- Assistance in healing of cutaneous ulcers including venous ulcers.
- Reduction of acute chronic edema.
- Reduction of lower limb pain to trauma or surgery.

**Indication:**
- Primary Congenital lymphedema (Milroy’s disease, praecox, Lymphedema).
- Secondary lymphedema, resulting from lymph node resection following Cancer (Breast, OBGYN, and Prostrate Cancers).
- Chronic Venous insufficiency, Venous stasis, venous stasis ulcers.
- Aid in the reduction and control of peripheral edema.

**Contraindication:**
- Inflammatory phlebitis
- Pulmonary embolism.
- Congestive heart failure.
- Pulmoedema.
- Suspected deep vein thrombosis.
- Increased venous and lymphatic return is undesirable.

**Technical Specifications:**

- **User Interface**: Single Touch Button start
- **LCD Display**: 16 x 2 Alphanumeric LCD Display
- **LED Display**: Display of Mains, Battery, Low Battery (Power Status)
- **Bed Side Hangers Provided**: for easy hanging of unit to Bed/ Table side.
- **Weight**: 2.5 Kg with Battery and without Sleeves.
- **Dimensions**: 290mm (L) x 258mm (W) x108mm (H)
- **Capable of detecting**: changes in patient’s position changes (Please refer to ‘Method employed for Vascular Refill Detection Time’ in the same catalogue).
- **Capable of detecting Vascular Refill Detection time** (Please refer to ‘Method employed for Vascular Refill Detection Time’ in the same catalogue).
- **Capable of Auto detection of leg i.e. at one time both legs OR individual left or right leg garments can be used.** This happens at the start up of the unit.
- **Total Inflation Time**: For Ankle, Calf and Thigh is 15 seconds. (with Composite Sleeve) – Bilateral Compression simultaneously For Foot/ Toe is 7 seconds. (with Foot Sleeve).
- **Total Exhaust Time**: Minimum 20 seconds or more depending on the Vascular Refill Time.
• Type of Inflation : From Distal to Proximal i.e. from Ankle to Thigh (wave type).

Sequence of Inflation and Exhaust is shown below:

- Thigh Cuff (Not Inflated)
- Calf Cuff (Not Inflated)
- Ankle Cuff (Inflated)
- Thigh Cuff (Not Inflated)
- Calf Cuff (Inflated)
- Ankle Cuff (Deflated)
- Thigh Cuff (Deflated)
- Calf Cuff (Deflated)
- Ankle Cuff (Deflated)
- Thigh Cuff (Inflated)
- Calf Cuff (Deflated)
- Ankle Cuff (Deflated)

• Pressure : Provides Gradient Compression
  - Ankle : 45 mmHg ± 5 mmHg
  - Calf : 40 mmHg ± 5 mmHg
  - Thigh : 30 mmHg ± 5 mmHg
  - If Foot Only : 130 mmHg ± 5 mmHg

• Alarms : Low Battery, Low Pressure (can be used for detection of leakage in garments, pipes, disconnection), High Pressure (to indicate kinks in the pressure line).
  (Please note that all these Alarms are Audio-Visual in nature. Visual alarms appear either in the designated LEDs or LCD Display).

- Transport & Storage: (-)20 to 60 degrees Celsius
- Working Humidity : 30-85%
- Working Temperature : 0-48 degrees Celsius

Electrical Specifications:
• Battery : 12V, 2000 mAh, NiMH Battery capable of sustaining operation for 6 – 8 hours from Full charge.
• Mains : 100-270V AC, 50 Hz
• Power Chord : Medical Grade
• Safety : Confirming to MDD 93/42/EEC
Types of Garments:
- Types of Garments:
  - Categories: Disposable, Re-usable
  - Types: 1) Ankle, Calf, Thigh Composite Garments Sizes – Small, Medium, Large) 2) Foot Sizes – Small, Medium, Large.
- Material Used:
  - 1) Reusable Garment: Made of soft, Non Allergenic, breathable Material.
  - 2) Disposable Garment: Made of soft, Non Allergenic Material with tiny holes for air circulation.

Note: The Machine automatically detects the type of Garments during start up.

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<thead>
<tr>
<th>Disposable Garments</th>
<th>Reusable Garments</th>
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<tbody>
<tr>
<td><img src="image1.png" alt="Image of Disposable Garment" /></td>
<td><img src="image2.png" alt="Image of Reusable Garment" /></td>
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(Please get in touch with us, we can help you in meeting your exact requirement)

Method employed for Vascular Refill Detection Time

When the Vario-Ex is switched on, it carries out the following tests:
- Determines Power Status, Valve Status, Pump Status.
- Determines the type of Garments attached to it.

After doing so, it just fills up the Calf Garment to about 10mmHg (just enough to keep the garment in touch with the Patients’ Calf). It keeps monitoring the pressure and due to the Venous refill, there is a perceptible change in the interface pressure. Vario-Ex would keep noting the pressure every 5 seconds. If the rise of pressure is less than 0.4 mmHg during this interval, that time is recognized by the unit as the vascular refill detection time. If the total time elapsed is less than 20 seconds then the exhaust time (allowing time for Vascular Refill) is taken as 20 seconds. If it is more than 20 seconds, then the higher 10 second multiple is considered i.e. if it is 33 seconds then 40 seconds would be considered as Exhaust Time (allowing time for Vascular Refill). If it exceeds 60 seconds then the Vascular Refill Detection time is considered to be 60 seconds. This process is repeated every 30 Cycles and the Vascular Refill Time is recalculated. Please note that Vascular Refill Time also takes care of change in the patient’s position also. Vascular Refill Time would vary with the change in position of Patient.