



Sizing and application for optimal benefit

T.E.D.[™] Anti-Embolism Stockings
Nursing Procedure Guide



CardinalHealth
Essential to care[™]



T.E.D.[™] Anti-Embolism Stockings

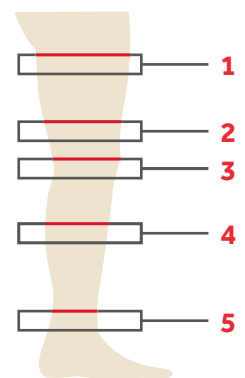
T.E.D.[™] anti-embolism stockings apply the clinically proven graduated pressure pattern of 18 mmHg at the ankle, 14 mmHg at the calf, 8mm Hg at the popliteal, 10 mmHg at the lower thigh and 8 mmHg at the upper thigh¹. It is important to measure patient's leg sizes to assure that the appropriate pressure pattern is applied.

T.E.D.[™] anti-embolism stockings are clinically proven to reduce DVT by 50%², and to promote increased blood flow velocity in the legs 138%¹ of baseline by compression of deep venous system.

T.E.D.[™] anti-embolism stockings have been clinically proven to prevent the damaging effects of venous distension that occurs during surgery and hospitalization³



Clinically proven pressure pattern



- 1 Upper thigh, 8 mmHg
- 2 Lower thigh, 10 mmHg
- 3 Popliteal, 8 mmHg
- 4 Calf, 14 mmHg
- 5 Ankle, 18 mmHg

Getting Started

You will need:

- Wall chart
- Tape measure
- T.E.D.™ stocking order pad/sizing chart

Nursing is responsible for sizing, application and maintenance of T.E.D.™ anti-embolism stockings.

Sizing

Proper sizing and application must be assured for optimal benefit of stockings. Please go until the end the sheet for use in packaging for specific sizing information.

A. Thigh length and thigh length with belt

- 1 (Measurement #1)
- 2 Measure calf circumference at greatest dimension. (Measurement #2)
- 3 Measure leg length from gluteal furrow to base of heel. (Measurement #3)
- 4 Consult the wall chart or back of this guide to determine the appropriate size.
 - a. If right and left legs measure differently, order two different stocking sizes.
 - b. If thigh circumference is greater than 36 inches, select a knee length stocking.
 - c. If calf circumference is outside the specified range of the recommended thigh length stocking based on Measurement #1, select a knee length stocking.

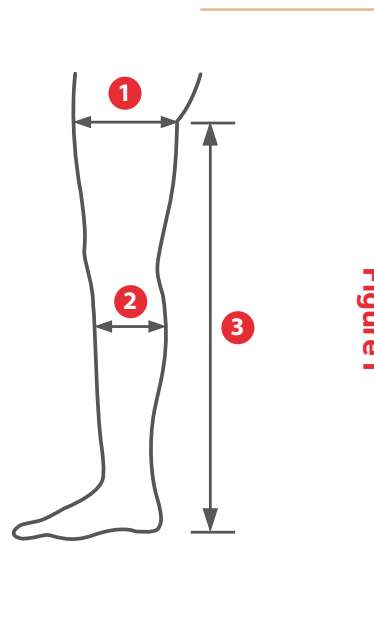


Figure I

B. Knee length

- 1 Measure calf circumference at greatest dimension (Measurement #1)
- 2 Measure length from bend of knee to base of heel. (Measurement #2)
- 3 Consult the wall chart or back of this guide to determine the appropriate size.
 - a. If right and left legs measure differently, order two different stocking sizes.

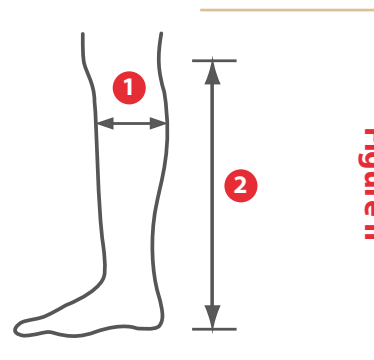


Figure II

C. Order two pairs of stockings to ensure that prophylaxis is uninterrupted during laundering care or to send a pair home with the patient.

Did you know?

Accordingly to a study by Dr. Sigel, the effect of graduated compression stockings on venous velocity lasts up to 30 minutes after removal of the stockings.¹

Applying

- A.** Insert hand into stocking as far as the heel pocket.



Figure III

- B.** Grasp center of heel pocket and turn stocking inside out to heel area.



Figure IV

- C.** Position stocking over foot and heel. Be sure patient's heel is centered in heel pocket.

- D.** Pull a few centimeters of the stocking up around the ankle and calf.



Figure V

- E.** Continue pulling the stocking up the leg. The stitch change (change in fabric sheerness) should fall between 2 to 5 cm below the bend of the knee.

- F.** As thigh portion of the stocking is applied, start rotating stocking inward so panel is centered over femoral artery. Panel is placed slightly towards the inside of the leg.



Figure VI

When using thigh length with belt be sure side panels are at hip bone and upper hem rests at the gluteal furrow.



Figure VII

When using thigh length, the top band rests in the gluteal furrow.

- G.** Smooth out wrinkles
- H.** Align inspection toe to fall under the toes. (Toes should not stick out).
- I.** Instruct patient as to the proper positioning of stocking to insure that the patient will not reposition the stockings incorrectly.
- J.** For improved efficacy in moderate/high risk patients, use T.E.D.[™] anti-embolism stockings plus Kendall SCD[™] compression system, A-V Impulse System[™] foot pump or anticoagulant. As dictated by the physician or hospital guidelines.



Figure VIII



Maintenance

- A.** Properly sized stockings need to be removed daily during bathing to inspect condition of skin if possible. Do not leave off more than 30 minutes.
- B.** Wash every 2 to 3 days to remove bodily secretions.
- C.** Machine wash, temperature not to exceed 70°C; Machine dry for 15 to 20 minutes, temperature not to exceed 80°C.
- D.** Keep stockings free from ointments, oil, lanolin and substances which deteriorate elastic.
- E.** With correct care, stockings last 2 to 3 months (approximately 30 washings).

Contraindications

Stockings are not recommended for patients with the following:

- 1** Any local leg condition in which stockings would interfere, such as: dermatitis, vein ligation (immediate postoperative), gangrene, or recent skin graft.
- 2** Severe arteriosclerosis or other ischemic vascular disease.
- 3** Massive edema of legs or pulmonary edema from congestive heart failure.
- 4** Extreme deformity of leg.

Charting

- A.** Record style and size of stocking applied, and date applied.
- B.** Record removal of stockings.
- C.** Note appearance of skin.
- D.** With correct care, stockings last 2 to 3 months (approximately 30 washings).
- E.** Record inspection of stockings during each shift.
- F.** Be aware of patient's size changing and weight loss.

Maintaining skin integrity with T.E.D.™ anti-embolism stockings while preventing DVT and/or improving vascular circulation

A. Assess potential risk for altered skin integrity

- Altered mobility (hyperactivity or decreased mobility)
- Altered nutritional state (emaciation; albumin < 3.0 g/dl)
- Altered metabolic state
- Altered skin turgor
- Altered sensation
- Altered circulation (venous or arterial)

B. Measure patient

DO use a measuring tape.

DO remeasure with decrease or increase of weight. (i.e., edema).

C. Apply stockings

DO “walk” the stockings up the legs and use powder sparingly, if necessary, to assist with easy application.

D. Maintain stockings properly

DO check for proper heel and gusset placement.

DO remove stockings at least daily, inspect skin, provide skin care and reapply stockings.

E. Inspect skin

DO inspect skin* (especially ankle/heels) at least every 8 hours and document your assessment.

DO assess patient’s subjective report of comfort/discomfort.

F. Prevent all sources of pressure, shear, and friction

DO loosen linens and use bed cradles to increase patient comfort.

DO position patient using a lift sheet, overhead trapeze, etc.

DO keep HOB lower than 30° whenever possible.

DO use devices or measures which suspend heels to relieve pressure.



Don’t guess size of stockings. Tight or loose fitting stockings can impact compression efficacy.

Don’t pull or tug into place. This increases friction and shear.

Don’t position the heel of the stocking above or below the heel. This could impact the pressure gradient.

Don’t take stocking off for long periods of time to let the skin “breathe”. This could impact efficacy.

Don’t massage reddened areas. This can increase tissue damage.

Don’t rely solely on visual signs of pressure or friction. Visual signs of tissue damage may be late or absent.

Don’t tuck linens tightly. This increases pressure over heels and tops of toes.

Don’t pull patient up in bed dragging heels. This increases friction to heels.

Don’t keep HOB > 30° for long periods of time. This may increase friction and shear to heels.

Don’t use donut-type devices or rely solely on pressure reduction devices.

* More frequent inspection or aggressive care may be required for patients at high risk or in patients with signs and symptoms of tissue change.

Thrombosis Risk Assessment for Surgical & Medical Patients

Step 1: Risk factors associated with clinical setting

Choose no more than one of the below listed disease states or associated hospital services to determine the baseline risk factor score

Score 1 factor	Score 2 factors	Score 3 factors	Score 5 factors
<input type="checkbox"/> Minor surgery	<input type="checkbox"/> Major surgery (>45 min.)	<input type="checkbox"/> Major surgery with: - Myocardial infarction - Congestive heart failure or - Severe sepsis/ infection	<input type="checkbox"/> Elective major lower extremity arthroplasty
	<input type="checkbox"/> Laparoscopic surgery (>45 min.)	<input type="checkbox"/> Medical pa	<input type="checkbox"/> Hip, pelvis, or leg fracture
	<input type="checkbox"/> Patients confined to bed (>72 hrs.)		<input type="checkbox"/> Stroke
	<input type="checkbox"/> Immobilizing plaster cast		<input type="checkbox"/> Multiple trauma
	<input type="checkbox"/> Central ve		<input type="checkbox"/> Acute spinal cor

Baseline risk factor score (If Score \geq 5, go to Step 4)

Step 2: Risk factors associated with patient

Clinical (1 factor unless noted)	Hypercoagulable states (Thrombophilia) Inherited (score 3 factors for each)	Acquired (score 3 factors for each)
<input type="checkbox"/> Age 41 to 60 years	<input type="checkbox"/> Factor V Leiden/ Activated protein C resistance	<input type="checkbox"/> Lupus anticoagulant
<input type="checkbox"/> Age over 60 years (2 factors)	<input type="checkbox"/> Antithrombin III deficiency	<input type="checkbox"/> Antiphosphid antibodies
<input type="checkbox"/> History of DVT/PE (3 factors)	<input type="checkbox"/> Protein C or S deficiency	<input type="checkbox"/> Myeloproliferative disorders
<input type="checkbox"/> History of Prior Major Surgery	<input type="checkbox"/> Dysfibrinogenemia	<input type="checkbox"/> Disorders of plasminogen & plasmin activation
<input type="checkbox"/> Pregnancy, or postpartum (<1 month)	<input type="checkbox"/> Prothrombin 20210A	<input type="checkbox"/> Heparin-induced thrombocytopenia
<input type="checkbox"/> Malignancy (2 factors)	<input type="checkbox"/> Homocysteinemia	<input type="checkbox"/> Hyperviscosity syndrome
<input type="checkbox"/> Varicose veins		<input type="checkbox"/> Homocysteinemia
<input type="checkbox"/> Inflammatory bowel disease		
<input type="checkbox"/> Obesity (>20% of ideal body weight)		
<input type="checkbox"/> Oral contraceptives or hormone replacement therapy		

Additional risk factor score

Step 3: Total risk factor score

Baseline + Additional

Step 4: Recommended prophylactic regimens for each risk

Low risk (1 factor)	Moderate risk (2 factors)	High risk (3-4 factors)	Highest risk (5 or more factors)
No Specific Measures Early Ambulation	IPC or LDUH (q12h) or LMWH or GCS	GCS* and IPC or LDUH (q8h) or LMWH	GCS* and IPC† + (LDUH or LMWH) or ADH or LMWH or Oral Anticoagulants

* Combining GCS with other prophylactic methods (LDUH, LMWH or IPC) may give better protection than any modality alone.

† Data demonstrates benefit of Plantar Pneumatic Compression in total joint arthroplasty. Plantar Pneumatic Compression can also be used when IPC is not feasible, including leg trauma.

Selection guide

Thigh circumference	Calf girth	Leg length	Code	Size	Toe colour	Length colour
Less than 63,5 cm	Less than 30,5 cm small	Less than 74 cm short	3071LF	A	Yellow	Yellow
		74 cm to 84 cm regular	3130LF	B	Yellow	White
		84 cm or more long	3222LF	C	Yellow	Blue
	30,5 to 38 cm medium	Less than 74 cm short	3310LF	D	Grey	Yellow
		74 cm to 84 cm regular	3416LF	E	Grey	White
		84 cm or more long	3549LF	F	Grey	Blue
	38 to 44,5 cm large	Less than 74 cm short	3634LF	G	Blue	Yellow
		74 cm to 84 cm regular	3728LF	H	Blue	White
		84 cm or more long	3856LF	J	Blue	Blue
63,5 to 81,3 cm	38 to 44,5 cm extra large	Less than 74 cm short	4010LF	K	Green	Yellow
		74 cm to 84 cm regular	4114LF	L	Green	White
		84 cm or more long	4216LF	M	Green	Blue
63,5 to 81,3 cm	44,5 to 54,6 cm extra large	Less than 74 cm short	3180LF	N	Green	Yellow
		74 cm to 84 cm regular	3181LF	P	Green	White
		84 cm or more long	3182LF	Q	Green	Blue
	54,6 to 66 cm extra large	Less than 74 cm short	3183LF	R	Red	Yellow
		74 cm to 84 cm regular	3184LF	S	Red	White
		84 cm or more long	3185LF	T	Red	Blue

Thigh length style



Thigh circumference	Calf girth	Leg length	Code	Size	Toe colour	Length colour
Less than 63,5 cm	Less than 30,5 cm extra small	Less than 71 cm short	3306	AA+	Orange	White
		71 cm and more long	3320	BB+	Orange	Blue
	25 to 30,5 cm small	Less than 74 cm short	3039	A+	Green	White
		74 cm to 84 cm regular	3364	B+	Green	Blue
	30,5 to 38 cm medium	Less than 74 cm short	3144	C+	Grey	White
		74 cm to 84 cm regular	3449	D+	Grey	Blue
63,5 to 81,3 cm	38 to 44,5 cm large	Less than 74 cm short	3221	E+	Blue	White
		74 cm to 84 cm regular	3523	F+	Blue	Blue
63,5 to 81,3 cm	38 to 44,5 cm extra large	Less than 74 cm short	3922	G+	Green	White
		74 cm to 84 cm regular	3995	H+	Green	Blue

Thigh length with belt



Calf girth	Leg length	Code	Size	Toe colour	Length colour
Less than 30,5 cm small	Less than 41 cm regular	7071	A-	Yellow	White
	41 cm and more long	7339	B-	Yellow	Blue
30,5 to 38 cm medium	Less than 43 cm regular	7115	C-	Grey	White
	43 cm and more long	7480	D-	Grey	Blue
38 to 44,5 cm large	Less than 46 cm regular	7203	E-	Blue	White
	46 cm and more long	7594	F-	Blue	Blue
44,5 to 51 cm extra large	Less than 46 cm regular	7604	G-	Green	White
	46 cm and more long	7802	H-	Green	Blue
21 to 58,4 cm extra extra large	Less than 46 cm regular	7470LF	J-	Red	White
	46 cm and more long	7471LF	K-	Red	Blue
58,4 to 66 cm extra extra extra large	Less than 46 cm regular	7472LF	L-	Brown	White
	46 cm and more long	7473LF	M-	Brown	Blue

Knee Length



References:

1. Sigel B, et al. Type of Compression for Reducing Venous Stasis. Archives of Surgery. 1975; 110: 171-175.
2. Ishak, M.A. and Morley, K.D. Deep venous thrombosis after total hip arthroplasty: a prospective controlled study to determine the prophylactic effect of graded pressure stockings Br. J. Surg 1981; 68: 429-432.
3. Coleridge-Smith PD, et al. Deep Vein Thrombosis: Effect of Graduated Compression Stockings on Distension of the Deep Veins of the Calf. British Journal of Surgery. June 1991. Vol 78, No. (6): 724-726.

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