

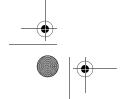




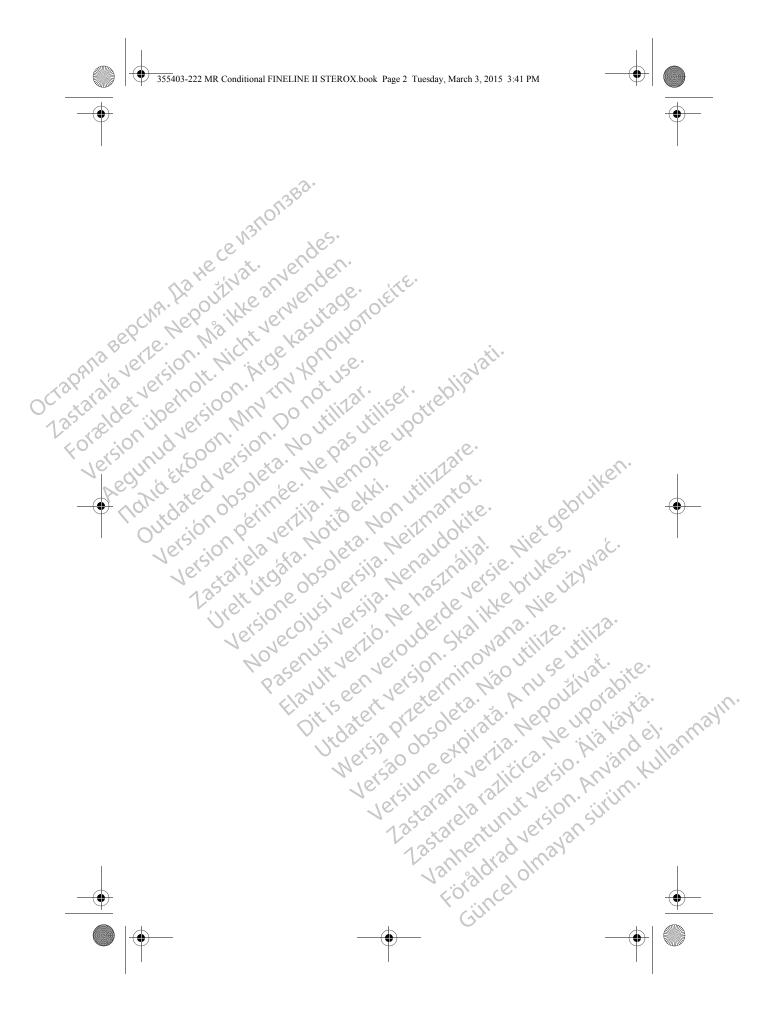


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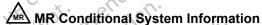




### DESCRIPTION

The FINELINE™ II Sterox models 4456, 4457, 4458, 4459, 4479, and 4480 bipolar endocardial pacing leads are designed for use with implantable pulse generators for long-term cardiac pacing.

This literature is intended for use by professionals trained or experienced in device implant and/or follow-up procedures.



These leads can be used as part of the ImageReady™ MR Conditional Pacing System or the ImageReady MR Conditional Defibrillation System (hereafter each referred to as an MR Conditional System) when connected to Boston Scientific MR Conditional pulse generators. Patients with an MR Conditional System may be eligible to undergo MRI scans if performed when all Conditions of Use, as defined in the ImageReady MR Conditional Pacing System MRI Technical Guide or the ImageReady MR Conditional Defibrillation System MRI Technical Guide<sup>1</sup> (hereafter each referred to as the MRI Technical Guide), are met. Components required for MR Conditional status include specific models of Boston Scientific pulse generators, leads, and accessories; the Programmer/Recorder/Monitor (PRM); and PRM Software Application. For the model numbers of MR Conditional pulse generators and components, as well as a complete description of the ImageReady MR Conditional System, refer to the applicable MRI Technical Guide.

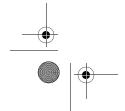
# Implant-related MRI Conditions of Use

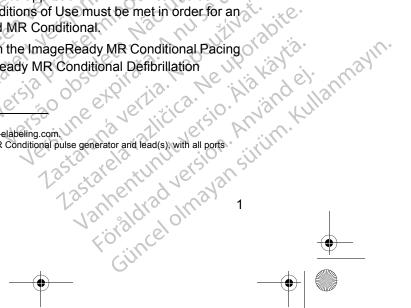
The following subset of the MRI Conditions of Use pertains to implantation, and is included as a guide to ensure implantation of a complete ImageReady MR Conditional System. For a full list of Conditions of Use, refer to the applicable MRI Technical Guide. All items on the full list of Conditions of Use must be met in order for an MRI scan to be considered MR Conditional.

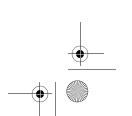
 Patient is implanted with the ImageReady MR Conditional Pacing

 Outdoor

 The ImageReady MR Conditional Pacing Available at www.bostonscientific-elabeling.com,
Defined as a Boston Scientific MR Conditional pulse generator and lead(s), with all ports occupied by a lead or port plug. System<sup>2</sup> or the ImageReady MR Conditional Defibrillation













- Bipolar pacing operation or pacing off with the ImageReady MR Conditional Pacing System
- Pulse generator implant location restricted to left or right pectoral
- At least six (6) weeks have elapsed since implantation and/or any lead revision or surgical modification of the MR Conditional
- No other active or abandoned implanted devices, components. or accessories present such as lead adaptors, extenders, leads, or pulse generators
- Pacing threshold ≤ 2.0 V in pace-dependent patients with the ImageReady MR Conditional Pacing System
- No evidence of a fractured lead or compromised pulse generatorlead system integrity

Lead Features
A silicone rubhdexame A silicone rubber collar at the distal tip contains 0.75 mg of dexamethasone acetate. Each lead is composed of two individually coated conductor wires coradially wound together to form a single conductor coil. The lead includes silicone rubber or polyurethane outer insulation, iridium oxide-coated (IROX™) titanium tip electrode and a platinum iridium anode. The distal slotted/blunt tip electrode is coated with polyethylene glycol. Fixation is achieved by silicone rubber tines. The lead is compatible with pulse generators having IS-1<sup>3</sup> connectors.

> Pacing and sensing impedance values, determined according to European Standard EN 45502-2-1:2003 (paragraphs 6.2.2 and 6.2.3), are within 780-1125  $\Omega$  and 595-790  $\Omega$ , respectively. Note that these values are derived from in vitro testing, and are not representative of clinically measured lead impedance

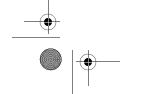
This device is intended for single-use only.

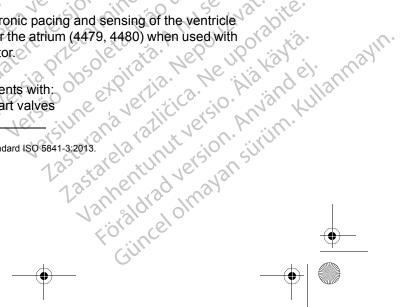
# INDICATIONS

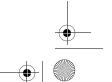
Lastarela allicica. Ne lihorali Lastarela allicica. The lead is intended for chronic pacing and sensing of the ventricle Vanhentunut versio, Alakayta, (4456, 4457, 4458, 4459) or the atrium (4479, 4480) when used with Jacents with:

... urcuspid heart valves

3. IS-1 refers to the international standard ISO 5841-3,2013.











hypersensitivity to a nominal single dose of 0.75 mg dexamethasone acetate

### **WARNINGS**

NOTE: Refer to the applicable MRI Technical Guide for a complete list of MRI-related Warnings and Precautions.

- Unless all of the MRI Conditions of Use (as described in the MRI Technical Guide) are met. MRI scanning of the patient does not meet MR Conditional requirements for the implanted system, and significant harm to or death of the patient and/or damage to applicable when Conditions of Use are met or not met, as well as
- Implant of the system cannot be perform

  Zone III (and higher) as defined.

  Radiology Griden

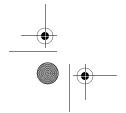
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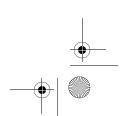
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  Line patient and/ Implant of the system cannot be performed in an MRI site Zone III (and higher) as defined by the American College of Radiology Guidance Document for Safe MR Decition including the total content of the system cannot be performed in an MRI site Zone III (and higher) as defined by the American College of Radiology Guidance Document for Safe MR Decition including the total content of the system cannot be performed in an MRI site Zone III (and higher) as defined by the American College of Radiology Guidance Document for Safe MR Decition including the total content of the system cannot be performed in an MRI site Zone III (and higher) as defined by the American College of Radiology Guidance Document for Safe MR Decition including the total content of the system cannot be performed in an MRI site Zone III (and higher) as defined by the American College of Radiology Guidance Document for Safe MR Decition including the total content of the system cannot be performed in an MRI site Zone III (and higher) as defined by the American College of Radiology Guidance Document for Safe MR Decition including the total content of the system cannot be performed in an MRI site Zone III (and higher) as defined by the American College of Radiology Guidance Document for Safe MR Decition including the total content of the system cannot be performed in an MRI site Zone III (and higher) as defined by the American College of Radiology Guidance Document for Safe MR Decition including the total content of the system cannot be performed in an American College of the system cannot be performed in an American College of Radiology Guidance Document for Safe MR Decition in the system cannot be performed in an American College of the system cannot be performed in an American College of Radiology Guidance Document for Safe MR Decition in the system cannot be performed in an American College of the system cannot be performed in the system cannot be p Radiology Guidance Document for Safe MR Practices4. Some of room, the control room, or the MRI site Zone III or IV areas.
  - The use of battery-powered equipment is recommended during lead implantation and testing to protect against fibrillation that may be caused by alternating currents.
  - Line-powered equipment used in the vicinity of the patient must be properly grounded.
  - Lead connector pins must be insulated from any leakage currents that may arise from line-powered equipment.
  - Diathermy exposure. Do not subject a patient with an implanted pulse generator and/or lead to diathermy since diathermy may cause fibrillation, burning of the myocardium, and irreversible damage to the pulse generator because of induced currents.
  - may of the device and/or lead to some result in patient injury, illness, or meuse, reprocessing, or resterilization may also create a

    Kanal E, et al., American Journal of Roentgenology 188:1447-74, 2007.













risk of contamination of the device and/or cause patient infection or cross-infection, including, but not limited to, the transmission of infectious disease(s) from one patient to another. Contamination of the device may lead to injury, illness, or death of the patient.

# **PRECAUTIONS**

### General

- Inspect sterile packaging prior to opening. Do not use if damaged. (See "Sterilization" on page 7.)
- Prior to the implantation of this lead, confirm lead/pulse generator

NOTE: Use of Boston Scientific MR Conditional pulse generators and leads is required for an implanted system to be considered MR Conditional. Refer to the appropriate ImageReady MR Conditional Pacing System or Definitional System MRI Technical Guide for many generators, leads or needs. scanning.

> **NOTE:** Other implanted devices or patient conditions may cause a patient to be ineligible for an MRI scan, independent of the status of the patient's ImageReady MR Conditional System.

- Defibrillating equipment should be kept nearby for immediate use during the implantation procedure.
- · It has not been determined whether the warnings, precautions, or complications usually associated with injectable dexamethasone acetate apply to the use of this lead. Refer to the current Physicians' Desk Reference™ 5 for potential adverse effects.

# Handling

- oraldrad version, kinvanu elianmayin.
  Giincel olmayan siiriim. Kullanmayin. Avoid the use of excessive force or surgical instruments, as damage to the insulation could cause leakage and/or prevent proper lead function.
- Do not wipe or immerse the electrode in fluid.
- Aguinening Asign, Suriandel Use the suture sleeve when securing the lead to avoid placing 5. Physicians' Desk Reference is a trademark of Thomson Healthcare Inc.









Avoid bending the conductor coil, since attempts to restore the original shape may weaken the structure.

### **Implanting**

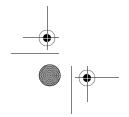
- The subclavian venipuncture technique for lead introduction may be associated with an increased risk of conductor failure due to compressive forces generated in the medial angle between the clavicle and the first rib; thus, an extremely medial introduction site should be avoided.
- Remove the stylet and funnel/cap before connecting the lead to the pulse generator. Leaving the stylet in the lead could cause coil fracture and/or heart perforation.
- Do not suture directly to the insulation. Always use the suture sleeve to anchor the lead.

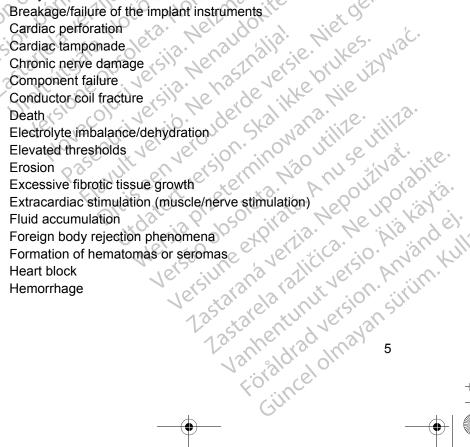
# POTENTIAL ADVERSE EVENTS

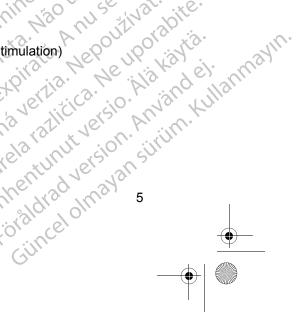
Based on the literature and on pulse generator and/or lead implant experience, the following list includes the possible adverse events associated with implantation of products described in this literature:

- Air embolism
- Allergic reaction
- Arterial damage with subsequent stenosis
- Bleeding

- Cardiac tamponade
- Chronic nerve damage
  - Component failure
- age
  ...ailure
  ...uuctor coil fracture
  Death
  Electrolyte imbalance/dehydration
  Elevated thresholds
  Erosion
  Excessive fibrotic tise
  xtracardiac











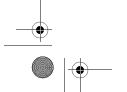


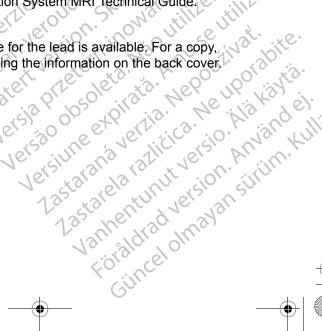
- Hemothorax
- Inability to pace
- Inappropriate therapy (e.g., shocks and antitachycardia [ATP] where applicable, pacing)
- Incisional pain
- Incomplete lead connection with pulse generator
- Infection including endocarditis
- Lead dislodgment
- Lead fracture
- Lead insulation breakage or abrasion
- Malignancy or skin burn due to fluoroscopic radiation
- Myocardial trauma (e.g., tissue damage, valve damage)
- Myopotential sensing
- Oversensing/undersensing
- Pericardial rub, effusion
- Pneumothorax
- Pulse generator and/or lead migration
- Syncope
- Tachyarrhythmias, which include acceleration of arrhythmias and early, recurrent atrial fibrillation)
- Thrombosis/thromboemboli
- Valve damage
- Vasovagal response
- Venous occlusion
- Venous trauma (e.g., perforation, dissection, erosion)

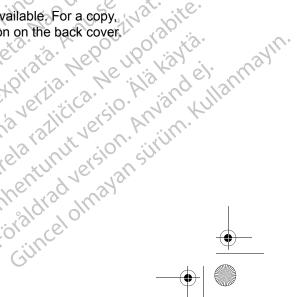
For a list of Potential Adverse Events associated with MRI scanning, refer to the appropriate ImageReady MP Condition scanning, refer to the appropriate ImageReady MR Conditional Pacing System or Defibrillation System MRI Technical Guide.

# WARRANTY

A limited warranty certificate for the lead is available. For a copy, contact Roston Scientific value that is contact Boston Scientific using the information on the back cover. Lastarana verlia. Nepo Versiline expiration















### IMPLANT INFORMATION

NOTE: Refer to the appropriate ImageReady MR Conditional Pacing System or Defibrillation System MRI Technical Guide for considerations affecting choice and implant of leads for use as part of an MR Conditional system.

Proper surgical procedures and techniques are the responsibility of the medical professional. The described implant procedures are furnished for informational purposes only. Each physician must apply the information in these instructions according to professional medical training and experience.

### **Precautions**

- Remove the stylet and funnel/cap before connecting the lead to the pulse generator. Leaving the stylet in the lead could cause coil fracture and/or heart perforation.
- Do not suture directly to the insulation. Always use the suture sleeve to anchor the lead.

# Sterilization

This product is supplied in a sterile package for direct introduction into the operating field. The package and its contents have been exposed to ethylene oxide gas, and sterility is verified on each lot. Before the package is opened, it should be examined carefully for damage that may have compromised sterility. (For instructions on opening the sterile package, see Figure 1 and 2.) If such damage is detected, the entire contents should be returned to Boston Scientific.

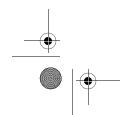
### Storage

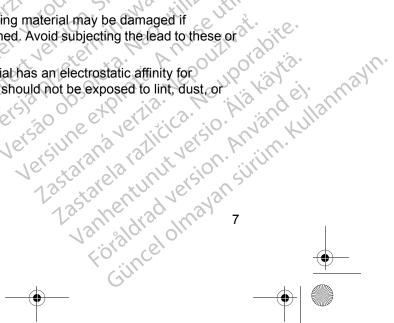
Store at 25°C (77°F). Excursions permitted between 15°C to 30°C (59°F to 86°F). Transportation spikes permitted up to 50°C (122°F)

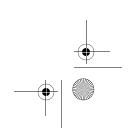
The conductor or its insulating material may be damaged if stretched, crimped, or crushed. Avoid subjecting the lead to these or

.... reau s insulating material has an electrostatic affinity for particulate matter and thus should not be exposed to lint, dust, or other similar contaminants.

Precautions













- Avoid the use of excessive force or surgical instruments, as damage to the insulation could cause leakage and/or prevent proper lead function.
- Do not wipe or immerse the electrode in fluid.
- Use the suture sleeve when securing the lead to avoid placing the lead under extreme tension.
- Avoid bending the conductor coil, since attempts to restore the original shape may weaken the structure.

# General Information

It is important to position the lead so as to minimize mechanical stresses and maximize electrical contact with the cardiac wall. Implantation should, therefore, be performed in a facility permitting fluoroscopic verification of satisfactory lead tip placement.

Available transvenous implantation routes include the cephalic, subclavian and external or internal jugular veins. Venous access can be gained by employing either the venipuncture (suitable for the subclavian or internal jugular routes) or cutdown (suitable for the cephalic or external jugular routes) techniques.

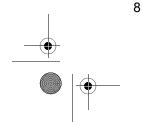
If the subclavian route is selected and access by venipuncture is preferred, a percutaneous lead introducer (7 French or larger) should be used, and its application should be guided by the following considerations:

# **Precautions**

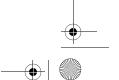
 The subclavian venipuncture technique for lead introduction may be associated with an increased risk of conductor failure due to compressive forces generated in the medial angle between the clavicle and the first rib; thus, an extremely medial introduction site should be avoided.

# Insertion Procedures

To employ the cutdown technique, expose and incise the desired vein. For the venipuncture technique, insert a lead-introducer sheath into the desired vein (see instruction sheet packaged with may be used him with killannaying the him and an arranged and a single fully inserted into the lead, either introduce the lead into the incised vein (for cutdown), or advance the lead through the sheath and into the desired vein (for venipuncture see Figure 3). If desired, the vein lifter included in the sterile package may be used to facilitate load in to facilitate lead introduction (see Figure 4) when employing the cutdown technique.













Cautiously advance the lead. If resistance is encountered, withdraw the lead a short distance and then readvance it. Repeat this procedure until the lead tip enters the right atrium. The tip of an atrial or ventricular lead can be advanced to the desired stimulation site by following one of the two procedures below:

- withdraw the stylet so that the lead's distal end begins resuming
- 2. Maintaining fluoroscopic observation, advance the lead tip while
- au tip into the right atrium, partially its J shape and points anteromedially.
  2. Maintaining fluoroscopic observation, advance the lead tip while holding the stylet stationary until the tip enters and becomes lodged in the atrial appendage.
  3. If the lead tip is properly lodged in the appendage, the lead's J curve will straighten slightly when the lead is gently retracted a short distance. Under AP fluoroscopy, the lead tip short distance with each atrial contract. snort distance. Under AP fluoroscopy, the lead is gently retracted a snort distance. Under AP fluoroscopy, the lead tip should point medially toward the left atrium and should sway from side to side with each atrial contraction.

  Ventricular Placement

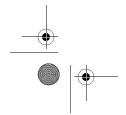
  1. After advancing the lead fine straight straight.

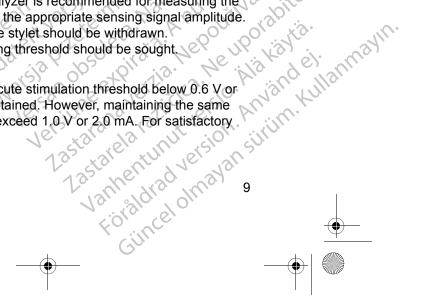
- end. (Curve the stylet as shown in Figure 5.) The curve will assist in passing the lead across the tricuspid valve into the ventricle.
- 2. Once the lead has entered the ventricle, the straight stylet should be used again to cautiously advance the lead until the tip is lodged in the trabeculae at the apex. Exercise care to avoid perforating the ventricular wall.
- 3. Verify with lateral fluoroscopy that the lead tip is not in a posterior position, which would probably indicate that it has entered the coronary sinus and must be repositioned.

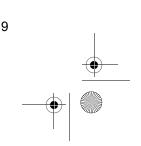
### **Threshold Measurements**

A pacemaker system analyzer is recommended for measuring the stimulation threshold and the appropriate sensing signal amplitude.

Using a 500  $\Omega$  load, an acute stimulation threshold below 0.6 V or 1.2 mA can usually be obtained. However, maintaining the corresistance, it should not exceed 1.0 V or 0.0 an acute stimulation threshold below 0.6 V or ... mA can usually be obtained. However, maintaining the same resistance, it should not exceed 1.0 V or 2.0 mA. For satisfactory













sensing, the ventricular sensing signal amplitude should be at least 5.0 mV. The recommended impedance range is 200-2000  $\Omega$  .

### Atrial

Acute stimulation thresholds are usually lower than 1.0 V or 2.0 mA with a 500 Ω load. Acute atrial thresholds above 1.5 V or 3.0 mA (using a 500  $\Omega$  load) suggest a need to reposition the lead. The atrial sensing signal amplitude will typically range from 0.5 to 4.0 mV, but a value of 1.5 mV or above is preferable. The recommended impedance range is 200-2000  $\Omega$  .

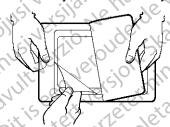
CAUTION: Be sure that the stylet has been removed before connecting the lead to the implanted pulse generator. Leaving the stylet in the lead could cause coil fracture and/or heart perforation. Also be sure that any funnel/cap installed over the lead connector(s) (as a guide for the stylet and to maintain lubrication of the connector) has been removed.

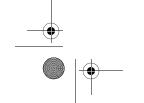
### Securing the Lead

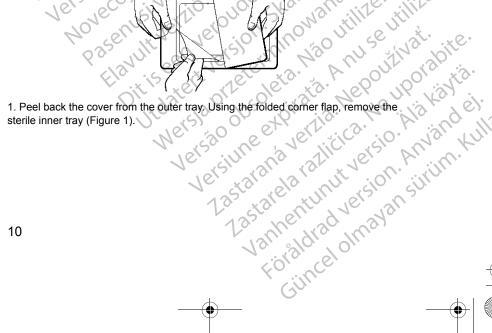
Once electrode stability and a satisfactory stimulation threshold have been attained, slide the pre-installed suture sleeve into position at the desired anchor point. Secure the sleeve to the lead by tying a non-absorbable suture around the sleeve near its middle (see Figure 6). Pass an end of the same suture through subcutaneous tissue and, once again, tie it around the sleeve.

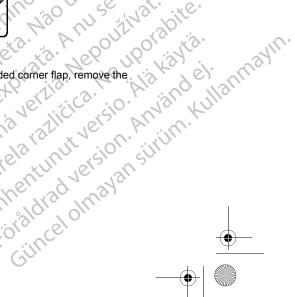
# Notes:

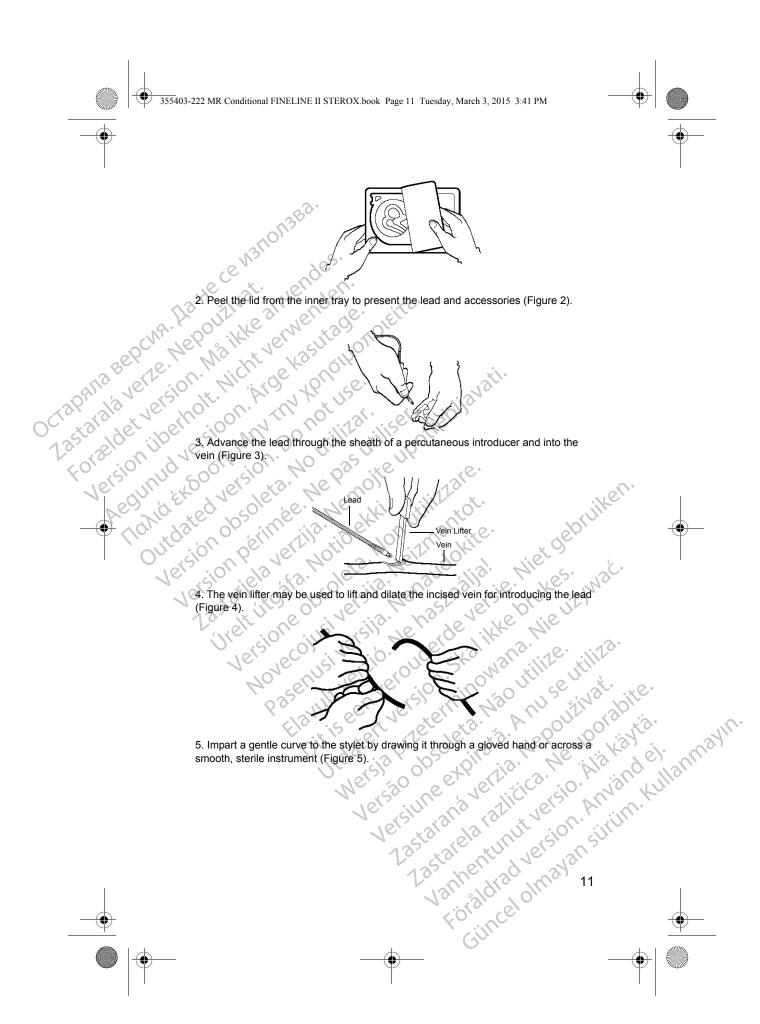
- The suture should be tied tight enough to prevent the lead from moving within the sleeve, but not so tight that it might deform the lead's conductor coil.
- Do not tie the suture directly to the lead body.

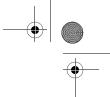




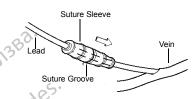












6. Slide the integral suture sleeve into the desired anchor position, and secure with a nonabsorbable suture (Figure 6).

# **POSTIMPLANT**

Perform follow-up evaluation as recommended in the applicable

EXPLANTED PRODUCTS

NOTE: Return all explanted pulse generators and leads to Scientific. Examination of explanted leads can provide information for continued improvement in system reliable warranty considerations.

NOTE: Disposal of explanting subject to Subject t Forzeldet version NOTE: Return all explanted pulse generators and leads to Boston information for continued improvement in system reliability and

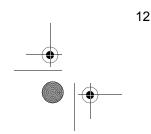
warranty considerations.

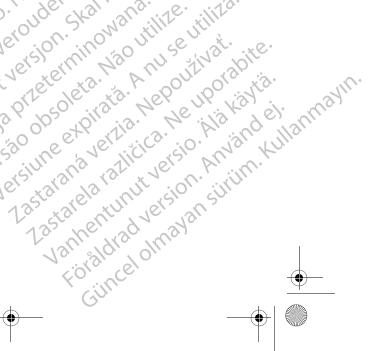
NOTE: Disposal of explanted pulse generators and/or leads is subject to applicable laws and regulations. For a Refureed Product Kit, contact Boston Scientifications. Disposal of explanted pulse generators and/or leads i subject to applicable laws and regulations. For a Returned Product Kit, contact Boston Scientific using the information the back cover. Jn Jit is een verouderde versier de hinter de linkern.

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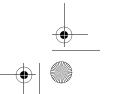


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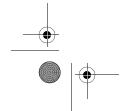


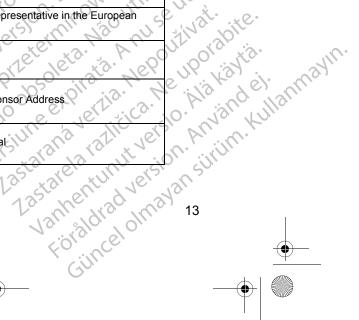


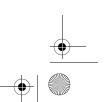




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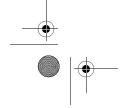






# **SPECIFICATIONS**

	1380	4479/4480 (Atrial) 4456/4457 (Ventricular)	4458/4459 (Ventricular)	
	Polarity	Bipolar	Bipolar	
	Distal Assembly	٠.		
	Introducer size/insertion diameter (minimum)	7 Fr/2.3 mm	7 Fr/2.3 mm	
	Tine material	Silicone rubber	Silicone rubber	
0	Eluting Collar	Silicone rubber	Silicone rubber	
1.	Eluting Collar Steroid  Electrode(s) Tip (cathode) Shape Diameter Surface area Materials  Coating (soluble) <sup>a</sup> Sleeve (anode) Surface area	Dexamethasone acetate (0.75 mg)	Dexamethasone acetate (0.75 mg)	
	Electrode(s)	CIP		
	Tip (cathode)		KI.	
3/0	Shape	Slotted/blunt	Slotted/blunt	
	Diameter	1.9 mm (5.7 French)	1.9 mm (5.7 French)	
OV.	Surface area	5 mm <sup>2</sup>	5 mm <sup>2</sup>	
20	Materials	, , , , , , , , , , , , , , , , , , , ,	IROX (Iridium oxide coated	
	2 Waterials	titanium)	titanium)	
10	Coating (soluble) <sup>a</sup>	Polyethylene glycol	Polyethylene glycol	
<i>(</i> 0.	Sleeve (anode)		i giyee.	·O·
Joe Strain	Surface area	24 11 (2.2	22-2-2	VE,
0	Surface area	31 mm <sup>2</sup>	33 mm <sup>2</sup>	
73	Materials	Platinum iridium	Platinum iridium	<del></del>
1,0		16 mm	16 mm	Ť
20. "	electrodes	1000	0,	1 <sub>e</sub>
16,	Lead Body	1810 19 110	119. 11. 2.	13°C.
7	Conductor construction	Parallel-wound bifilar coil	Parallel-wound bifilar coil	
	Conductor material	Nickel-cobalt alloy with	Nickel-cobalt alloy with silver	
	13, X, 6	silver core	core	
	Conductor wire insulation	Polymer material	Polymer material	
	Insulation	55D polyurethane	80A Silicone rubber	13.
	Length New York	4456: 52 cm 4457: 58 cm 4479: 45 cm 4480: 52 cm	4458: 52 cm 4459: 58 cm	at ite.
	Diameter	1.7 mm (5 Fr)	2 mm (6 Fr)	:30:
	Resistance	15 36 10		0, 40.
	To tip	40 Ω maximum	40 O maximum	137 . 231
	To sleeve	40 Ω maximum	40 O maximum	(9, 76), (1),
	Connector Assembly	TO SETTION TO THE	To 32 III GAILIGHT	", "Un "Ilgi,
	D: 1	2.2 mm (IC 1b)	2.2 mm (IS 1b)	Ma Kn.
	Diameter Materials	3.2 mm (IS-1°) Silicone rubber, 316L	Cilicono rubbor 2461	7
	iviateriais	stainless steel	stainless steel	
	14	1.35 to 1.35 t	4458: 52 cm 4459: 58 cm  2 mm (6 Fr)  40 Ωmaximum  40 Ωmaximum  3.2 mm (IS-1b)  Silicone rubber, 316L stainless steel	
			Gir,	











,		4479/4480 (Atrial) 4456/4457 (Ventricular)	4458/4459 (Ventricular)
न	Retention Strength <sup>c</sup>	10 N	10 N
C	Connector pin diameters		
	Cathode	1.6 mm	1.6 mm
	Anode	2.7 mm	2.7 mm
C	Connector pin length	5 mm	5 mm
P	Accessories included	Stylets	Stylets
Y	7 110	Funnel	Funnel
CN4. 18	31, 31, 30	Vein lifter	Vein lifter
ana Beerle jore	Maximum proven connector Tested according to prEN4	or retention strength in Intermedi 5502-2, September 16, 1996.	cs' Side-Lock connector.
3091/3/0/5/6/5/6	K. B. JK.	" US"	:31
	1. 4/4 /4/		
icio di si de silve	, 00/1, 7/1/ VC	131. es. 16/2	
ictorial and et liberho	Sioolly Till Do ho	itilizar, itiliser, trek	
Lastarante Telerine	sion My Dong	ot utilizar. Upotrek	)))°
Crapana Bepcha. Leb.  1. Astarala Verzeino	sion My Thong	or passite upotreio	<sup>7,</sup> €.
Lastarala verze. To be to the last are to the	Tested according to prEN4	5502-2; September 16, 1996.	Me.

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Move Colusi Versila. Nei Zmantot.

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