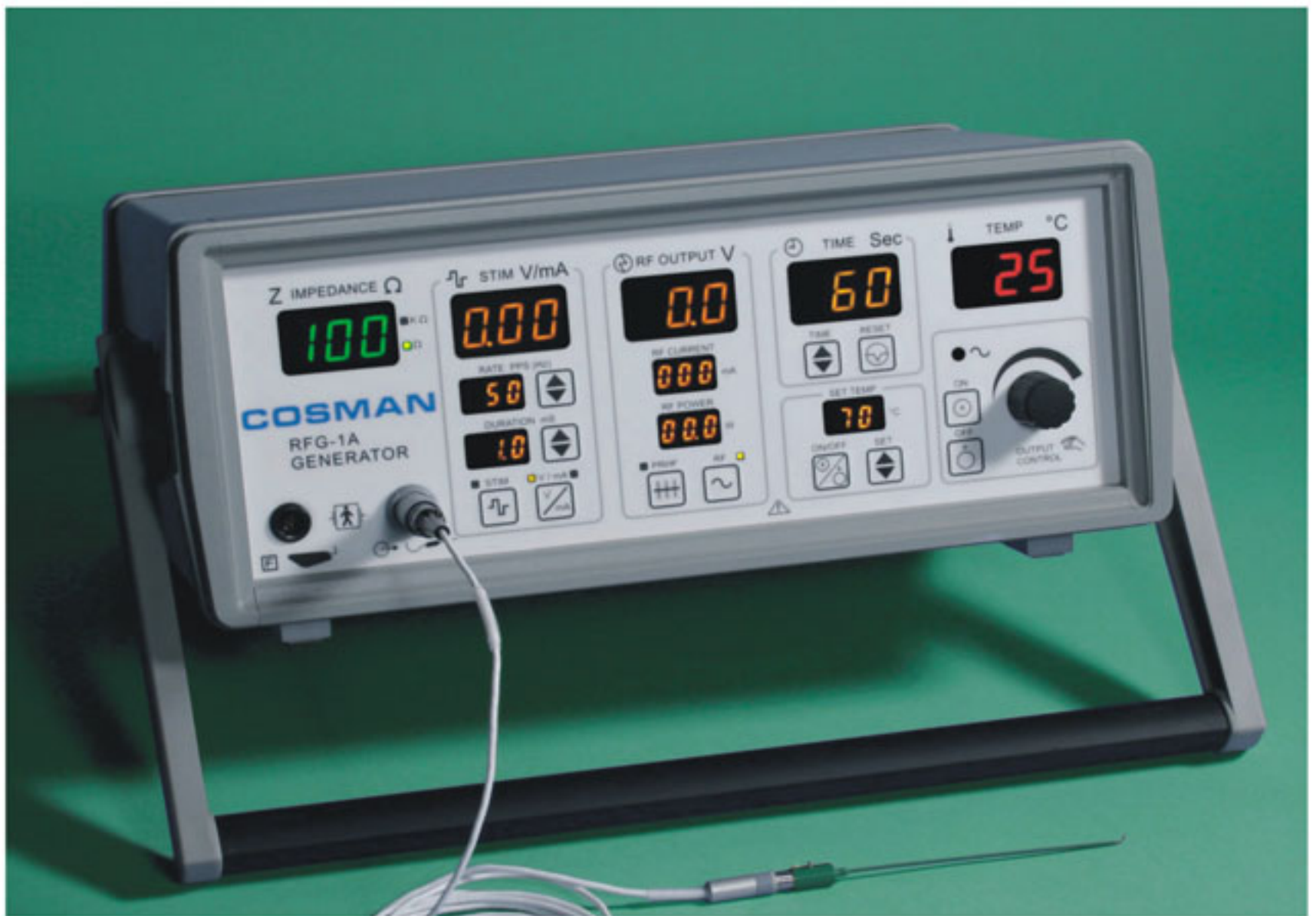


# COSMAN

## RFG-1A Lesion Generator



### **Cosman History:**

#### **The Pioneers and Leaders in Radiofrequency Technology**

The RFG-1A embodies nearly 60 years of Cosman Radiofrequency (RF) technology. Bernard J. Cosman, who founded Radionics (originally called Cosman and Company) in 1938, built the first commercial RF lesion generator in 1952. His son, Professor Eric R. Cosman of the M.I.T. Physics Department, directed Radionics from 1970 to 2000. Professor Cosman designed dozens of RF generator models, including the RFG-3C Plus, 3CF, 3C, 3B, 3D, 3E, 5, 6, etc., and an accompanying vast array of RF electrode systems which are used by thousands of clinicians around the world. Radionics, the family business, was sold in 2000.

Cosman Medical, Inc. was founded in 2004 by Professor Cosman to continue the innovation and progress in RF medical technology that he and his father pioneered and lead from the very beginning of the field.

### **The RFG-1A Generator: A Modern and Advanced Design**

The RFG-1A has been designed by Cosman and manufactured by his team of expert engineers and technicians at Cosman Medical, all of whom he selected from the best of his previous coworkers at Radionics. Thus the RFG-1A incorporates the most modern and advanced electronic designs plus decades of RF clinical experience, making it more functional, reliable, and safe.

#### **Wider Settings for Both Neurosurgeons and Pain Management Clinicians**

The RFG-1A has a wider range of stimulation parameters than its RFG-1B counterpart to accommodate the needs of both neurosurgeons and pain management specialists.

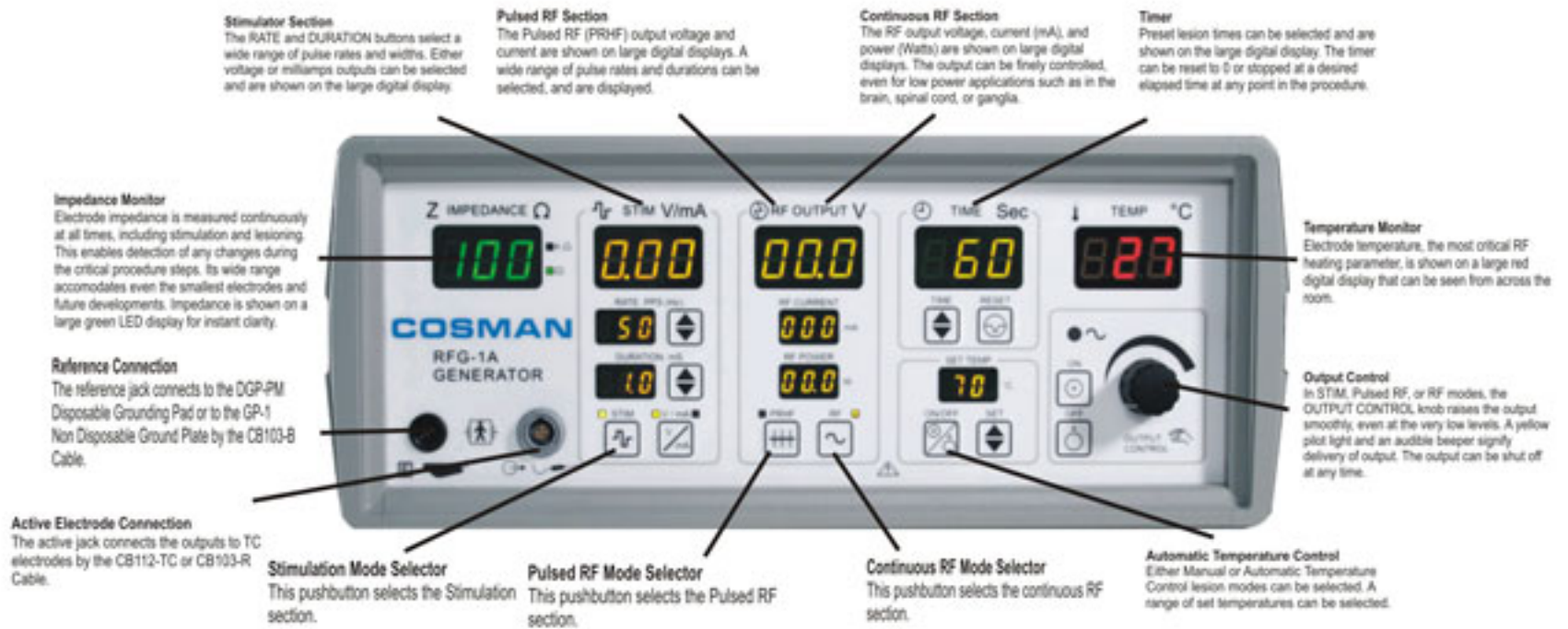
### **Easy to Operate: Clear, Simple, and Logical Controls**

The RFG-1A has a simplified and easy-to-understand front panel. The Impedance, Stimulator, RF Output, Timer, and Temperature controls are located logically from left to right on the front panel. Large color-coded digital displays are bright and easy-to-read from a distance in the procedure room. There are no confusing menus or program steps to remember, but rather a clear panel layout to improve clarity and confidence at every step.

#### **Reliability and Economy**

The RFG-1A's modern design means better technology for less production costs. That translates directly to a more robust and reliable unit. It also means that Cosman can pass the savings onto the customer, offering a superior generator at a better price.

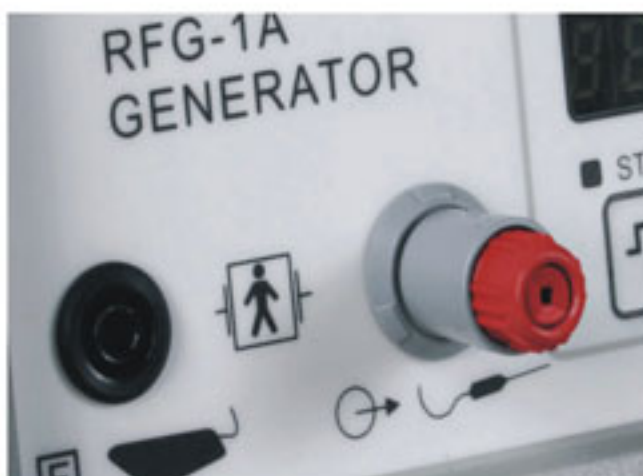




## Sterile Adapted RFG-1A-S

### Sterile Adapted

The RFG-1A is available in the sterile-adapted version, the RFG-1A-S. It comes with a SKG Sterilizable Knob, FS-1 Footswitch, and RFG-STP Sterilizable Test Pad, so that the unit can be operated without breaking sterility. Clear sterile drapes are available to cover the front panel to sterily actuate pushbuttons.



### Self-Test Features

The RFG-1A can be tested before and during a procedure. The RFG-TP Output Test Plug plugs into the output jack and simulates a test load to check RF heating and temperature controls. The optional RFG-STP Sterilizable Test Pad checks connections, electrodes, and cables without breaking sterility. The RFG-1A displays actual measured output values, not preset screen settings, confirming what is being delivered to the patient.

### Lightweight and Portable

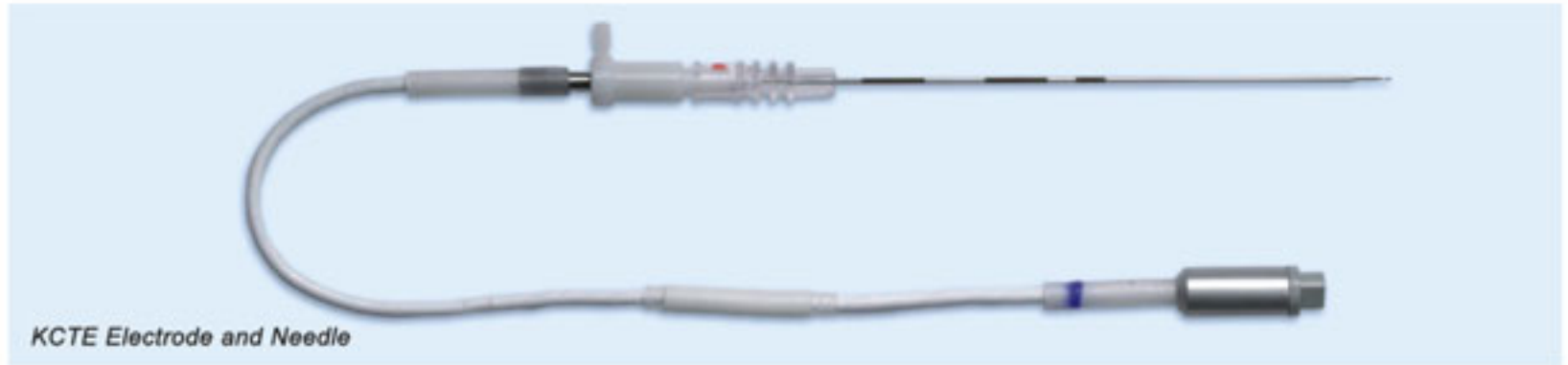
The RFG-1A is lightweight, only 15 pounds (6.8 Kgm), and compact, making it easy to transport and store. It has an optional HAN Carrying Handle that also serves as a tilt stand (see front page figure). Other related options are shown on the next page.

### RFG-1A Options

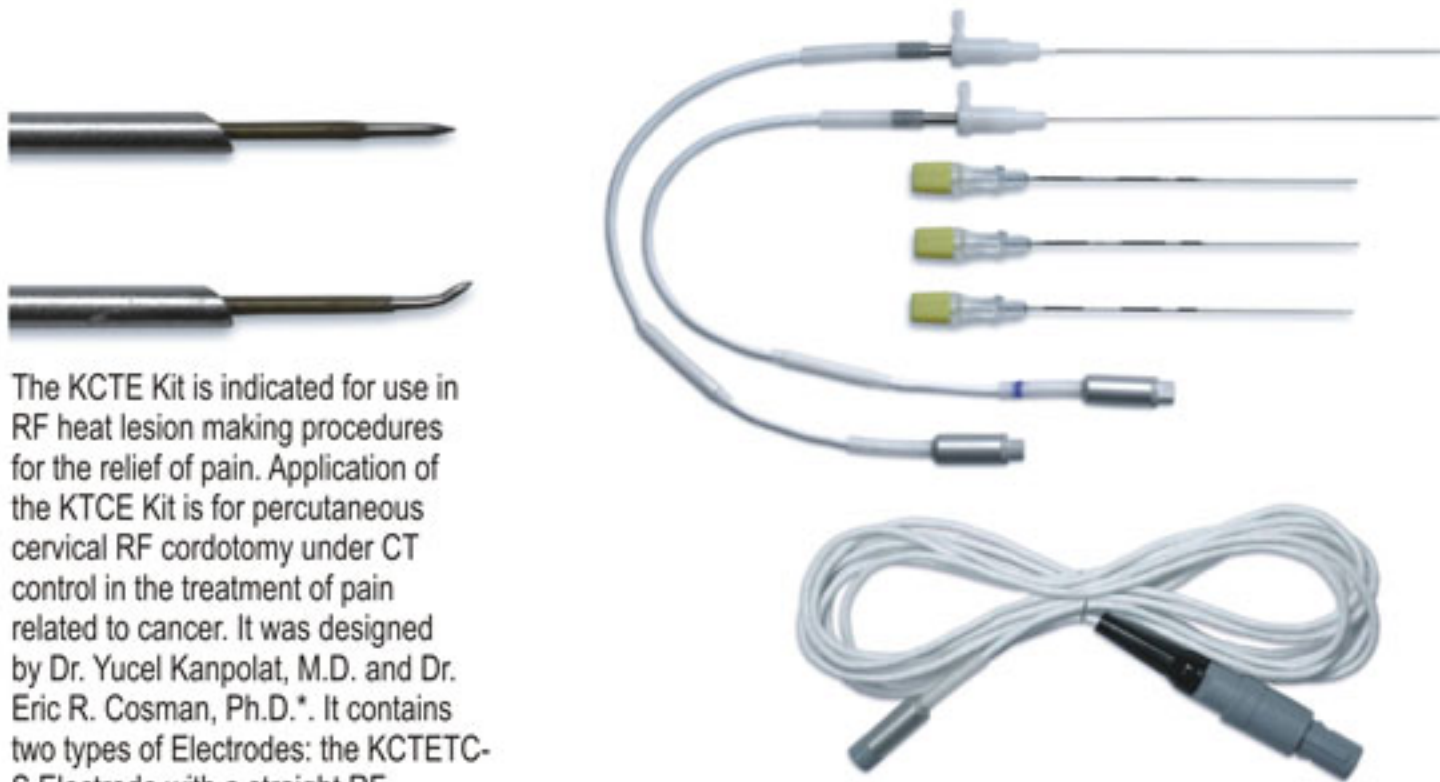
#### Graphic Display Outputs

Rear panel output jacks enable real-time graphic display and storage of RFG-1A parameters of a procedure on a laptop computer using the CB120 cable.





KCTE Electrode and Needle



The KCTE Kit is indicated for use in RF heat lesion making procedures for the relief of pain. Application of the KCTE Kit is for percutaneous cervical RF cordotomy under CT control in the treatment of pain related to cancer. It was designed by Dr. Yucel Kanpolat, M.D. and Dr. Eric R. Cosman, Ph.D.\*. It contains two types of Electrodes: the KCTETC-S Electrode with a straight RF tip, and the KCTE-TC-C Electrode with a curved RF tip. Each Electrode has a sharpened exposed tip having 0.27 mm tip diameter and 1.8 mm tip length. They both have a built-in TC thermocouple temperature sensor in the RF tip for fast-responding, accurate monitoring of the RF heating process. Their small RF tips can produce a discrete lesion volume in the lateral spinothalamic tract. Both Electrodes have the KCTE-SC Sizing Clamp on their hub for adjustability of the RF tip extension beyond the tip of the KCTE-C Spinal Needle (as shown in the figure). The Spinal Needle is introduced percutaneously, and provides a guide for the KCTE Electrode. The Sizing Clamp has

a gasket to reduce CSF leaks, and the Electrode has millimeter markings on its hub to adjust tip extension. The Kit comes with three KCTE-C Spinal Needles with stylets, each having a 20 gauge, 3½ inch long shaft and 40 degree bevel point. The CB112-TC Cable connects the KCTETC Electrodes to the Cosman RF Generator.

#### KCTE Kit Components

**KCTE-TC-S**, TC Electrode with straight tip and KCTE-SC Sizing Clamp;  
**KCTE-TC-C**, TC Electrode with curved tip and KCTE-SC Sizing Clamp;  
**KCTE-C**, Spinal Needle (three each);  
**CB112-TC**, TC Cable, 8-foot;  
**KCTE-CASE**, Case for storage and sterilization.



KCTE Kit

#### KTCE-R Kit Components

Same as the KTCE Kit, but with the C112-TC Cable (instead of the CB112-TC Cable) for connection to Radionics RFG-3C or RFG-3C Plus RF Lesion Generators.

\* Kanpolat Y, Cosman ER. Special Radiofrequency Electrode System for Computed Tomography-guided Painrelieving Procedures. Neurosurgery 1996, 389(2): 600-603





CSK-TC10



CSK-TC5

CB112-TC



CSK-TC10

CB112-TC



CSK-TC15

CB112-TC



CSK Kit

The Cosman CSK Electrode Kits are used with the CSK, SMK, and RFK Cannulae for percutaneous RF lesionmaking in the treatment of a variety of pain syndromes, most frequently related to the spine. Applications of the CSK Kit include: facet denervations, dorsal root ganglion lesioning, and sympathetic nerve lesioning, both for continuous RF and pulsed RF lesion modes. The CSK Kit Electrodes are an improved design by Dr. Eric R. Cosman, Ph.D. of the older SMK Electrode Kit.

The CSK Kits come in three versions; the CSK-5, CSK-10, and CSK-15 Kits, containing the CSK-TC5, CSK-TC10, and CSK-TC15 thermocouple (TC) Electrodes, respectively. These Electrodes are used with the nominal 5 cm, 10 cm, and 15 cm long CSK, SMK, and RFK Cannulae, respectively, which are available separately. The CSK-TC Electrodes have a thermocouple temperature sensor built into their distal tips to monitor the RF lesion process. They come with an integral 1 meter long leader-cable to reduce drag. The Electrode hubs are color-coded: white for the CSK-TC5; blue for the CSK-TC10; and yellow for the CSK-TC15. This corresponds to hub colors of the CSK-C5 Cannula; CSK-C10 and RFK-C10 Cannulae; and

CSK-C15 and RFK-C15 Cannulae, respectively, and reduces the chance of inserting the wrong Electrode into the Cannula. Each Kit comes with the CB112-TC Cable that connects the CSK-TC Electrodes to the Cosman RFG-1A or RFG-1B RF Lesion Generators.

#### CSK-5 Kit Components

**CSK-TC5**, TC5 Electrode;  
**CB112-TC**, TC Cable;  
**CSK-5 CASE**, Case for storage and sterilization\*.

#### CSK-10 Kit Components

**CSK-TC10**, TC10 Electrode;  
**CB112-TC**, TC Cable;  
**CSK-10 CASE**, Case for storage and sterilization\*.

#### CSK-15 Kit Components

**CSK-TC15**, TC15 Electrode;  
**CB112-TC**, CT Cable;  
**CSK-15 CASE**, Case for storage and sterilization\*.

#### CSK-5-R, -10-R, -15-R Kits

**CSK-5-R, CSK-10-R, CSK-15-R** are the same as the CSK Kit but with the **C112-TC** Cable for the Radionics RFG-3C or RFG-3C Plus RF Lesion Generators (instead of the CB112-TC).

\*The CSK Kits can be flash autoclaved or ETO sterilized.







TEW Curved TC Electrode and Cannula



Straight



Curved



TEW-CN



TEW-SS



TEW-CTC



TEW-STC

The Cosman TEW Kit is used for percutaneous RF lesion-making in the trigeminal ganglion for the treatment of trigeminal neuralgia. It was designed by Dr. John M Tew, Jr., M.D. and Dr. Eric R. Cosman, Ph.D. The TEW Kit enables off-axis or straight electrode tip extensions for greater flexibility in lesion size and positioning in the ganglion. It includes an insulated 19 gauge Cannula into which the straight TEW-STC Electrode or the curved tip TEW-CTC Electrode can be inserted. The Solid Stylet is placed in the Cannula during percutaneous insertion into the foramen ovale. The Stylet is removed, and the Straight TC Electrode is inserted in the Cannula if an axial tip extension is desired. Alternatively, the Curved TC Electrode is inserted into the Cannula if an off-axis tip extension is to extend the lesion off axis to reach difficult positions, such as the V1 ganglion division. Both electrodes have TC thermocouple temperature sensors built into their tips. The TEW Kit comes with the CB112-TC Cable that connects the TC Electrodes to the Cosman RFG-1A or the RFG-1B RF Lesion Generators.



CB112-TC

TEW-DS

TEW-IT

TEW-FA

### TEW Kit Components

- TEW-CN, Cannula;
- TEW-SS, Solid Stylet;
- TEW-STC, Straight TC Electrode;
- TEW-CTC, Curved TC Electrode;
- TEW-IT, Insertion Tool;
- TEW-FA, Flushing Adaptor;
- TEW-DS, Depth Stop;
- CB112-TC, TC Cable;
- TEW-CASE, Case for storage and sterilization\*.

### TEW-R Kit Components

Same as the TEW Kit but with the C112-TC Cable for the Radionics RFG-3C or RFG-3C Plus (instead of the CB112-TC Cable).



TEW Kit

### Common Replacement Parts

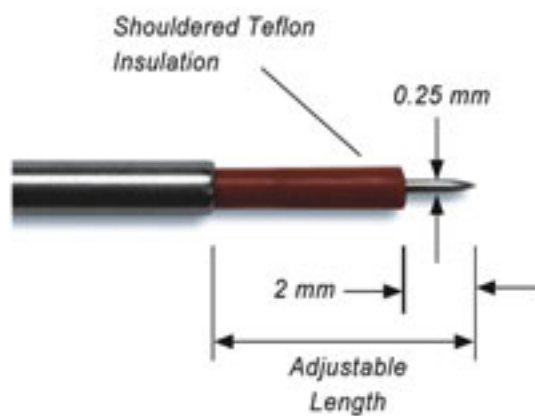
TEW-DS-P Package of 5 each TEW-DS Depth Stops, individually sterile packed.

\* The TEW Kit can be flash autoclaved or ETO sterilized.

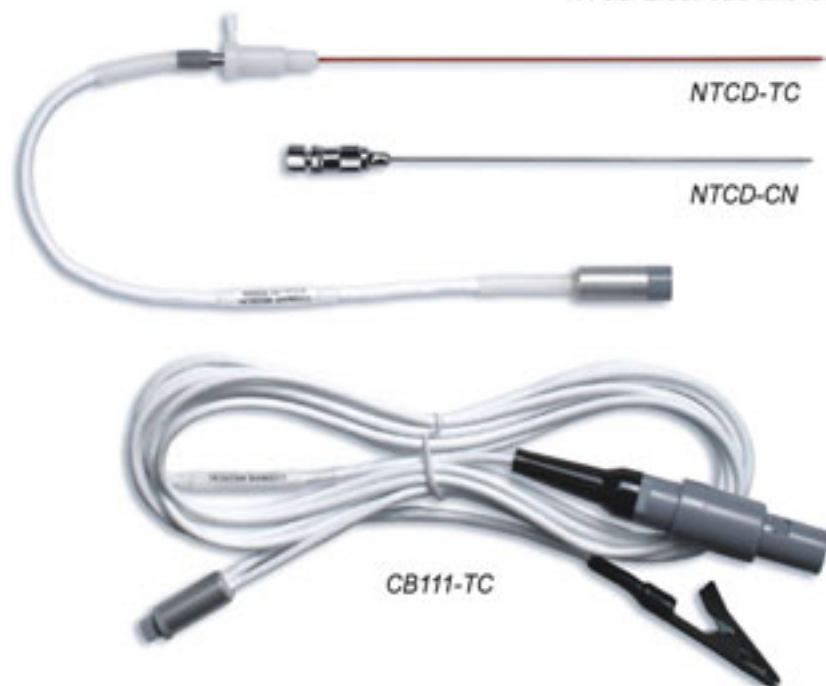




NTCD Electrode and Cannula



Detail of Electrode Tip



CB111-TC

The Cosman NTCD Kit is used for RF lesion-making in the dorsal root entry zone of the spinal cord. It was designed by Dr. Blaine S. Nashold, JR., M.D. and Dr. Eric R. Cosman, Ph.D. Applications of the NTCD Kit include procedures for the relief of deafferentation pain from avulsion of the spinal roots of the brachial or sacral plexus, paraplegia pain, post-herpetic neuralgia, and intractable pain of peripheral origin associated with phantom limbs, postthoracotomy, and severe peripheral neuropathies.

The NTCD-TC Electrode is designed to be light-weight for easy-handling without drag from the leader-cable. It has a sharpened tip that is 0.25 mm in diameter and 2.0 mm in length, and it has a built-in thermocouple (TC) temperature sensor in its tip for accurate, fast-acting control of the RF lesion process. The Electrode's

insulation has a shoulder adjacent to the exposed tip so the surgeon can visualize the penetration of the tip in the spinal cord up to the shoulder and so that the tip will not drift more than 2 mm into the cord. The NTCD-CN Cannula is initially passed over the Electrode for rigid hand-holding. The NTCD-SC Sizing Clamp, which comes with the Electrode, enables adjustability of the tip beyond the Cannula's square end. The CB111-TC Cable connects the Electrode to the Cosman RFG -1A or RFG-1B RF lesion Generator.

#### NTCD Kit Components

**NTCD-TC**, TC Electrode (comes with **NTCD-SC** Sizing Clamp);

**NTCD-CN**, Cannula (with Stylet);

**CB111-TC**, TC Cable with alligator clip reference connection.

**NTCD-CASE**, Case for storage and sterilization\*.

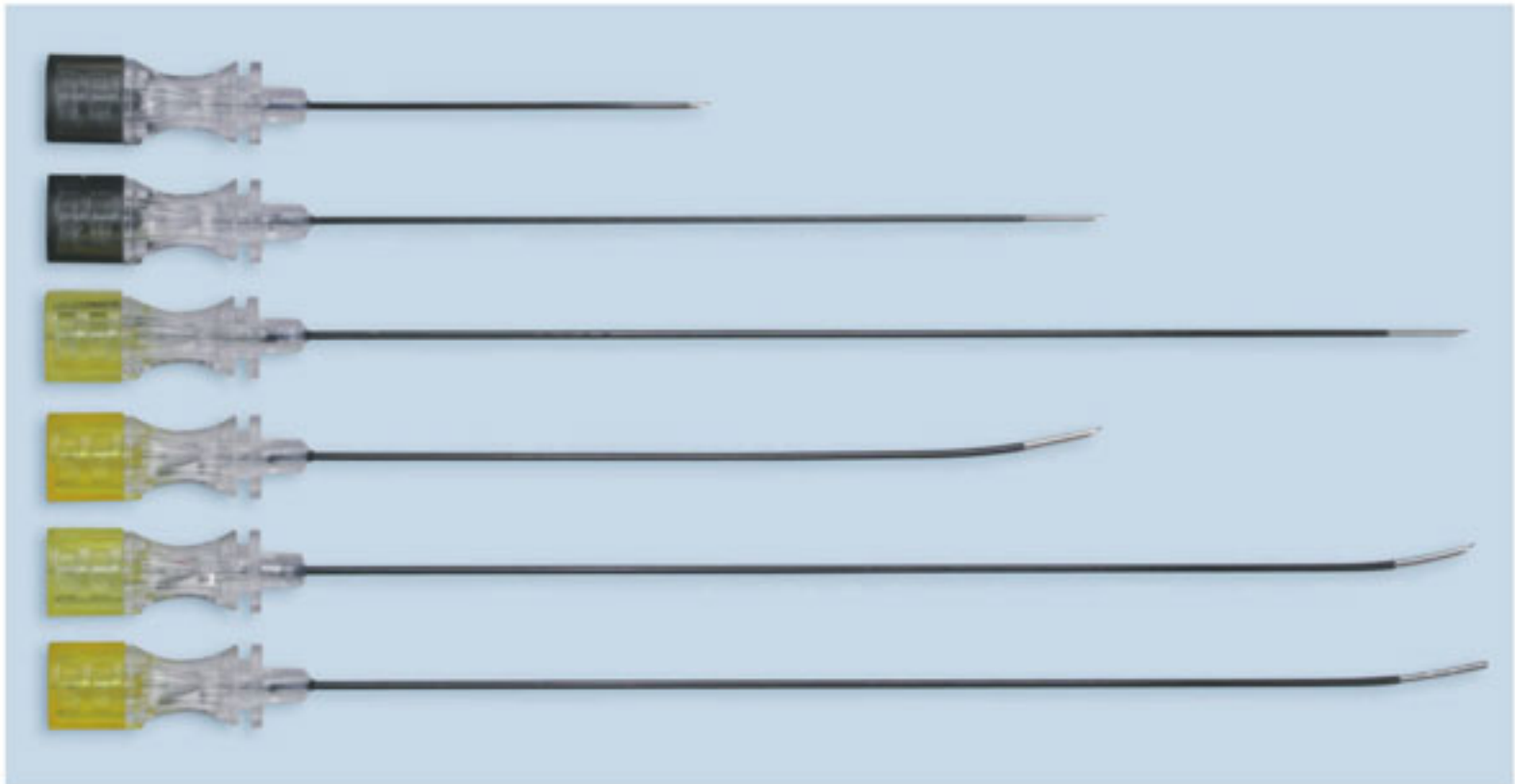


NTCD Kit

#### NTCD-R Kit

Same as the NTCD Kit but with the C111-TC Cable for the Radionics RFG-3C or RFG-3C Plus RF Lesion Generators (instead of the CB111-TC).

\* The NTCD Kit can be flash-autoclaved or ETO sterilized.



The LesionPoint RF Cannula is indicated for use in RF heat lesion making procedures for the relief of pain. Applications of the RF Cannulae may include making RF lesions at the medial branch of the spinal nerves, the dorsal root ganglia, the sympathetic nerves, and interdiscal nerves; both for continuous RF and for pulsed RF lesioning. The Cannulae are available in a variety of lengths, tip exposures, and gauges, shown in the table, to accommodate different target sites. They have ergonomic, radiolucent hubs for ease of handling and for Carm visualization. The hubs have a luer taper for fluid injection. The Angled RF Cannulae have a curved distal shape for steering the tip through tissue to place the tip at a desired target. It also enables lying the curved tip along the medial branch or alternatively at a more oblique angle to the medial branch depending on targeting approach. The 20 gauge Angled Cannulae come in either sharp or blunt tip. A Cannula is inserted with its stylet in place. When the tip is positioned at the target, the stylet is removed, and the Cosman CSK-TC Electrode is inserted into the Cannula and connected to the Cosman RF Generator to begin stimulation and lesioning. The CSK-TC5, CSK-TC10, and CSK-TC15 Electrodes fit the corresponding length RF Cannulae. Cannulae are sold in packages of 10 individual, sterile-pouched.

### LesionPoint RF Cannulae, Straight-Tip, Sharp-Tip

Catalog Number (Package of 10)	Nominal Cannula Length (mm)	Tip Exposure (mm)	Cannula Gauge
74.0540422	54	4	22
74.1000522	100	5	22
74.1001022	100	10	22
74.1500520	150	5	20
74.1501020	150	10	20
74.1000518	100	5	18
74.1001018	100	10	18
74.1500518	150	5	18
74.1501018	150	10	18

### LesionPoint RF Cannulae, Curved-Tip, Sharp-Tip

Catalog Number (Package of 10)	Nominal Cannula Length (mm)	Tip Exposure (mm)	Cannula Gauge
78.1001020	100	10	20
78.1501020	150	10	20
78.1001018	100	10	18
78.1501018	150	10	18

### LesionPoint RF Cannulae, Curved-Tip, Blunt-Tip

Catalog Number (Package of 10)	Nominal Cannula Length (mm)	Tip Exposure (mm)	Cannula Gauge
76.1001020	100	10	20
76.1501020	150	10	20

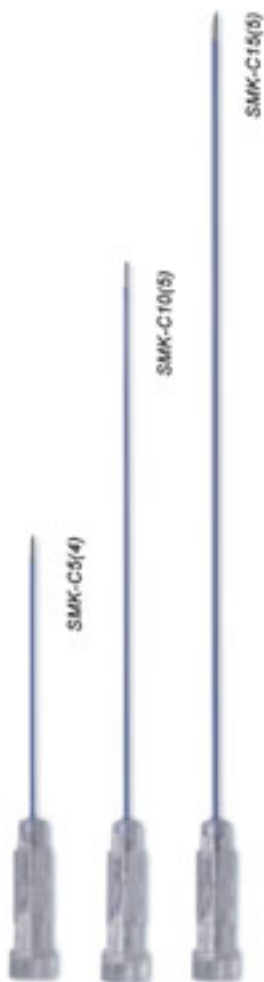




### DGP-PM Features

The DGP-PM Disposable Ground Pad features include:

- A large-area, 110 square centimeter dispersive reference electrode that is for standard pain therapy or neurosurgical RF procedures.
- Comes individually packed.
- Has a 9-foot leader wire with 4 mm shrouded safety connector.
- Requires no extra extension cable.
- Compatible with Cosman RF Generators.
- Compatible with Radionics RF Generators.



The SMK Sluiter-Mehta Cannulae are used for RF lesion-making for the relief of pain relating primarily to the spine. The Cannulae were designed by Dr. M. Sluiter and Dr. M. Mehta. Applications of the SMK Cannulae include making RF lesions at the medial branch of the spinal nerves, the dorsal root ganglia, the sympathetic nerves, and interdiscal nerves; both for continuous RF and for pulsed RF lesion modes. The Cannulae are available in a variety of lengths and RF tip exposures to accommodate different target sites. They have ergonomic, radiolucent hubs for ease of handling and for C-arm visualization. The hubs also have a luer taper for fluid injection. The nominally 5 cm long Cannula is 22 gauge and comes with a 4 mm exposed RF tip. The nominally 10 cm long Cannulae are 22 gauge and come with 2, 5, and 10 cm tips. The nominally 15 cm long Cannulae are 20 gauge and come with 2, 5, 10, and 15 mm long tips. A Cannula is inserted with its stylet in place. When the tip is positioned at the target, the stylet is removed, and the Cosman CSK-TC Electrode is inserted into the Cannula and connected to the Cosman RFG-1A or RFG-1B RF Lesion Generator to begin stimulation and lesioning. The Cosman CSK-TC5, CSK-TC10, and CSK-TC15 Electrodes accommodate the corresponding length SMK Cannulae.



SMK-C10(5)-B  
Package of 10 Cannulae

### Disposable SMK Cannulae

SMK Cannulae are sold in packages of 10 individual, sterile-pouched Cannulae designated as follows:

**SMK-C5(4)-B**; 10/pk, SMK-C5(4), 4 mm tip;  
**SMK-C10(2)-B**; 10/pk, SMK-C10(2), 2 mm tip;  
**SMK-C10(5)-B**; 10/pk, SMK-C10(5), 5 mm tip;

**SMK-C10(10)-B**; 10/pk, SMK-C10(10), 10 mm tip;  
**SMK-C15(2)-B**; 10/pk, SMK-C15(2), 2 mm tip;  
**SMK-C15(5)-B**; 10/pk, SMK-C15(5), 5 mm tip;  
**SMK-C15(10)-B**; 10/pk, SMK-C15(10), 10 mm tip;  
**SMK-C15(15)-B**; 10/pk, SMK-C15(15), 15 mm tip.