



January 23, 2023

Medtronic  
Madhuvanathi Soundirarajan  
Sr. Regulatory Affairs Specialist  
1800 Pyramid Place  
Memphis, Tennessee 38132

Re: K223494

Trade/Device Name: CD Horizon Spinal System  
Regulation Number: 21 CFR 888.3070  
Regulation Name: Thoracolumbosacral Pedicle Screw System  
Regulatory Class: Class II  
Product Code: NKB, KWP, KWQ, HBE, OLO  
Dated: November 18, 2022  
Received: November 21, 2022

Dear Madhuvanathi Soundirarajan:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database located at <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm> identifies combination product submissions. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part

801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see <https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products>); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to <https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems>.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (<https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance>) and CDRH Learn (<https://www.fda.gov/training-and-continuing-education/cdrh-learn>). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (<https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice>) for more information or contact DICE by email ([DICE@fda.hhs.gov](mailto:DICE@fda.hhs.gov)) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Anne D. Talley -S  for

Colin O'Neill, M.B.E.  
Assistant Director  
DHT6B: Division of Spinal Devices  
OHT6: Office of Orthopedic Devices  
Office of Product Evaluation and Quality  
Center for Devices and Radiological Health

Enclosure

## Indications for Use

510(k) Number (if known)

K223494

Device Name

CD HORIZON™ SPINAL SYSTEM

### Indications for Use (Describe)

The CD Horizon™ Spinal System with or without Sextant™ instrumentation is intended for posterior, non-cervical fixation as an adjunct to fusion for the following indications: degenerative disc disease (DDD - defined as back pain of discogenic origin with degeneration of the disc confirmed by history and radiographic studies), spondylolisthesis, trauma (i.e. fracture or dislocation), spinal stenosis, curvatures (i.e. scoliosis, kyphosis, or lordosis), tumor, pseudarthrosis, and/or failed previous fusion.

Except for hooks, when used as an anterolateral thoracic/lumbar system, CD Horizon™ Spinal System titanium, cobalt chrome, and stainless steel implants may also be used for the same indications as an adjunct to fusion.

With the exception of DDD, CD Horizon™ Legacy™ 3.5mm rods and associated components may be used for the aforementioned indications in skeletally mature patients as an adjunct to fusion. The 3.5mm rods may be used for the specific pediatric indications noted below.

When used for posterior non-cervical pedicle screw fixation in pediatric patients, CD Horizon™ Spinal System titanium, cobalt chrome, and stainless steel implants are indicated as an adjunct to fusion to treat progressive spinal deformities (i.e. scoliosis, kyphosis, or lordosis) including idiopathic scoliosis, neuromuscular scoliosis, and congenital scoliosis.

Additionally, the CD Horizon™ Spinal System is intended to treat pediatric patients diagnosed with the following conditions: spondylolisthesis/

spondylolysis, fracture caused by tumor and/or trauma, pseudarthrosis, and/or failed previous fusion. These devices are to be used with autograft and/or allograft. Pediatric pedicle screw fixation is limited to a posterior approach.

The CD Horizon™ PEEK rods are intended to provide posterior supplemental fixation when used with an interbody fusion cage for patients diagnosed with DDD. These DDD patients may also have up to Grade 1 spondylolisthesis or retrolisthesis at the involved level. This device is intended for 1-2 level use in the lumbosacral spine (L2 – S1) in skeletally mature patients. The device is intended for use with an interbody fusion cage at the instrumented level and is not intended for stand-alone use.

The CD Horizon™ Spire™ plate is a posterior, single-level, non-pedicle supplemental fixation device intended for use in the non-cervical spine (T1-S1) as an adjunct to fusion in skeletally mature patients. It is intended for plate fixation/attachment to spinous processes for the purpose of achieving supplemental fixation in the following conditions: DDD (as previously defined), spondylolisthesis, trauma, and/or tumor.

To achieve additional levels of fixation, CD Horizon™ Spinal System rods may be connected to the Vertex™ Reconstruction System with the Vertex™ rod connector. Refer to the Vertex™ Reconstruction System package insert for a list of the Vertex™ indications of use.

Type of Use (Select one or both, as applicable)

Prescription Use (Part 21 CFR 801 Subpart D)

Over-The-Counter Use (21 CFR 801 Subpart C)

**CONTINUE ON A SEPARATE PAGE IF NEEDED.**

## Indications for Use

510(k) Number (if known)  
K223494

Device Name

Navigated Reusable Instruments for use with StealthStation™ and IPC™ Powerease™ Systems

Indications for Use (Describe)

Medtronic Navigated Reusable Instruments are intended to be used during the preparation and placement of Medtronic screws during spinal surgery to assist the surgeon in precisely locating anatomical structures in either open, or minimally invasive, procedures. Medtronic Navigated Reusable Instruments are specifically designed for use with the StealthStation™ System, which is indicated for any medical condition in which the use of stereotactic surgery may be appropriate, and where reference to a rigid anatomical structure, such as a skull, a long bone, or vertebra can be identified relative to a CT or MR-based model, fluoroscopy images, or digitized landmarks of the anatomy. Medtronic Navigated Reusable Instruments are also compatible with the IPC™ Powerease™ System.

Type of Use (Select one or both, as applicable)

Prescription Use (Part 21 CFR 801 Subpart D)

Over-The-Counter Use (21 CFR 801 Subpart C)

### CONTINUE ON A SEPARATE PAGE IF NEEDED.

This section applies only to requirements of the Paperwork Reduction Act of 1995.

**\*DO NOT SEND YOUR COMPLETED FORM TO THE PRA STAFF EMAIL ADDRESS BELOW.\***

The burden time for this collection of information is estimated to average 79 hours per response, including the time to review instructions, search existing data sources, gather and maintain the data needed and complete and review the collection of information. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden, to:

Department of Health and Human Services  
Food and Drug Administration  
Office of Chief Information Officer  
Paperwork Reduction Act (PRA) Staff  
[PRASStaff@fda.hhs.gov](mailto:PRASStaff@fda.hhs.gov)

*“An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB number.”*

## Indications for Use

510(k) Number (if known)  
K223494

Device Name  
Medtronic Reusable Instruments for use with the IPC™ Powerease™ System

### Indications for Use (Describe)

The IPC™ System is indicated for the incision/cutting, removal, drilling and sawing of soft and hard tissue and bone, and biomaterials in Neurosurgical (Cranial, Craniofacial), Orthopedic, Arthroscopic, Spinal, Sternotomy, and General surgical procedures.

The IPC™ Powerease™ System is indicated for drilling, tapping, and driving screws and working end attachments during spinal surgery, including open and minimally invasive procedures. It is also used in placement or cutting of screws, posts, and rods.

Type of Use (Select one or both, as applicable)

Prescription Use (Part 21 CFR 801 Subpart D)

Over-The-Counter Use (21 CFR 801 Subpart C)

### CONTINUE ON A SEPARATE PAGE IF NEEDED.

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[PRASStaff@fda.hhs.gov](mailto:PRASStaff@fda.hhs.gov)

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**510(k) Summary**

**MEDTRONIC  
CD HORIZON™ Spinal System  
November 18, 2022**

|                               |   |
|-------------------------------|---|
| <b>I. Submitter</b>           | Medtronic Sofamor Danek, USA Inc.<br>1800 Pyramid Place<br>Memphis, Tennessee 38132<br>Telephone: (901)396-3133   |
| Contact Person                | Madhuvanathi Soundirarajan<br>Sr. Regulatory Affairs Specialist<br>Telephone Number:<br>Email: <a href="mailto:madhuvanathi.soundirarajan@medtronic.com">madhuvanathi.soundirarajan@medtronic.com</a>   |
| Date Prepared                 | November 18, 2022   |
| <b>II. Name of Device</b>     | CD Horizon™ Spinal System   |
| Common Name                   | Bone Screw, Pedicle Screw, Powered Instrument, Stereotaxic Instrument   |
| Classification Name           | Thoracolumbosacral Pedicle Screw System; Spinal Intervertebral Body Fixation Orthosis; Spinal Interlaminar Fixation Orthosis; Powered Simple Cranial Drills, Burrs, Trephines & Accessories; Stereotaxic Instrument   |
| Classification                | Implants: Class II<br>Instruments/Accessories: Class II   |
| Product Codes                 | NKB, KWP, KWQ (888.3070, 888.3060, 888.3050), HBE (882.4310), OLO (882.4560)  |
| <b>III. Predicate Devices</b> | <b>Primary Predicate:</b><br>1. CD Horizon™ Spinal System (K221244, S.E. 05/25/2022)<br><br><b>Additional Predicates:</b><br>2. CD Horizon™ Spinal System (K221646, S.E. 10/04/2022)<br>3. CD Horizon™ Spinal System (K162379, S.E. 11/16/2016)<br>4. CD Horizon™ Spinal System (K113174, S.E. 11/21/2011)<br>5. Anteralign™ Spinal System with Titan nanoLOCK™ Surface Technology (K214010, 04/12/2022)<br>6. CD Horizon™ Spinal System (K210637, S.E. 04/30/2021)<br>7. CD Horizon™ Spinal System (K201407, S.E. 09/10/2020)<br>8. CD Horizon™ Spinal System (K042025, S.E. 08/25/2004) |
|                               | The predicates have not been subject to a design related recall.  |
| <b>IV. Description</b>        | <b><u>CD Horizon™ Spinal System</u></b><br>The CD Horizon™ Spinal System consists of a variety of shapes and sizes of rods,   |

hooks, screws, Crosslink™ Plates, staples, and connecting components, as well as implant components from other Medtronic spinal systems which can be rigidly locked into a variety of configurations, with each construct being tailor-made for the individual case. A subset of CD Horizon™ Spinal System components may be used for posterior pedicle screw fixation in pediatric cases. These constructs may be comprised of a variety of shapes and sizes of rods (ranging in diameter from 3.5 to 6.35mm), hooks, screws, Crosslink™ plates and connecting components. Similar to the CD Horizon™ implants used in adult cases, these components can be rigidly locked into a variety of configurations, with each construct being tailor-made for the individual case. Certain components within the CD Horizon™ Spinal System are specifically excluded for use in pediatric patients. These include PEEK rods, Shape Memory Alloy Staples, Spire™ plates, and Dynalok™ bolts. Screws used in pediatric cases are only cleared for use via a posterior approach. Components used in pediatric cases are fabricated from medical grade stainless steel, medical grade titanium, titanium alloy, and medical grade cobalt-chromium-molybdenum alloy. Certain implant components from other Medtronic spinal systems can be used with the CD Horizon™ Spinal System in non-pediatric cases. These components include TSRH™ rods, hooks, screws, plates, Crosslink™ plates, connectors, staples, and washers, GDLH™ rods, hooks, connectors, and Crosslink™ bar and connectors; Liberty™ rods and screws; Dynalok™ Plus and Dynalok Classic™ bolts along with rod/bolt connectors; and Medtronic multi-axial rods and screws. Note: certain components are specifically designed to connect to specific rod diameters, while other components can connect to multiple rod diameters. Care should be taken so the correct components are used in the spinal construct. CD Horizon™ hooks are intended for posterior use only. CD Horizon™ staples and CD Horizon™ Eclipse™ rods and associated screws are intended for anterior use only. However, for patients of smaller stature and pediatric patients, CD Horizon™ 4.5mm rods and associated components may be used posteriorly. CD Horizon™ Spinal System implant components are fabricated from medical grade stainless steel, medical grade titanium, titanium alloy, medical grade cobalt-chromium-molybdenum alloy, or medical grade PEEK Optima-LT1. Certain CD Horizon™ Spinal System components may be coated with hydroxyapatite. No warranties, expressed or implied, are made. Implied warranties of merchantability and fitness for a particular purpose or use are specifically excluded. Never use stainless steel and titanium implant components in the same construct. Medical grade titanium, titanium alloy, and/or medical grade cobalt-chromium-molybdenum alloy may be used together. Never use titanium, titanium alloy, and/or medical grade cobalt-chromium-molybdenum alloy with stainless steel in the same construct. The CD Horizon™ Spinal System also includes anterior staples made of Shape Memory Alloy (Nitinol – NiTi). Shape Memory

Alloy is compatible with titanium, titanium alloy, and cobalt-chromium-molybdenum alloy. Do not use with stainless steel. These staples are not to be used in pediatric patients. PEEK Optima-LT1 implants may be used with titanium or cobalt-chromium-molybdenum alloy implants. CD Horizon™ PEEK rods are not to be used in pediatric patients. PEEK rods are only to be used with the associated pedicle screws as well as interbody fusion devices in the anterior spinal column. To achieve best results, do not use CD Horizon™ Spinal System implant components with components from any other system or manufacturer unless specifically allowed to do so in this or another Medtronic document. As with all orthopedic and neurosurgical implants, none of the CD Horizon™ Spinal System components should ever be reused under any circumstances.

**Medtronic Reusable Instruments for use with IPC™ Powerease™ System**

The Medtronic Reusable Instruments compatible with Medtronic's IPC™ Powerease™ System are spine preparation instruments, manufactured from materials commonly used in orthopedic procedures which meet available national or international standards specifications. Instruments may be connected to the Powerease™ Driver or used manually. These instruments are also compatible with various Medtronic spinal implant systems.

**Medtronic Navigated Reusable Instruments for use with StealthStation™ and IPC™ Powerease™ Systems**

Medtronic Navigated Reusable Instruments are spine preparation instruments made of high-grade stainless steel. These instruments are specifically designed for use in procedures where the use of stereotactic surgery may be appropriate. Placing Medtronic single-use sterile spheres on each of the NavLock™ Tracker passive stems allows a Medtronic computer-assisted surgery system such as the StealthStation™ Image Guidance System to track the instruments in the surgical field. Medtronic Navigated Reusable Instruments are compatible with various Medtronic spinal implant systems. These instruments are also compatible with Medtronic's IPC™ Powerease™ System when connected to the Powerease™ Driver.

**(Please note:** There are no new Navigated Instruments as a part of this submission. Medtronic would like to claim compatibility of the subject shanks with Navigated Instruments cleared in Predicate 1 (K221244 S.E, 05/25/2022) and Predicate 6 (K210637 S.E, 04/30/2021). The Description and Indications for Use for the StealthStation™ in this section is provided for reference.)

**V. Indications for**

**CD Horizon™ Spinal System**



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| <b>Use</b> | <p>The CD Horizon™ Spinal System with or without Sextant™ instrumentation is intended for posterior, non-cervical fixation as an adjunct to fusion for the following indications: degenerative disc disease (DDD - defined as back pain of discogenic origin with degeneration of the disc confirmed by history and radiographic studies), spondylolisthesis, trauma (i.e. fracture or dislocation), spinal stenosis, curvatures (i.e. scoliosis, kyphosis, or lordosis), tumor, pseudarthrosis, and/or failed previous fusion. Except for hooks, when used as an anterolateral thoracic/lumbar system, the CD Horizon™ Spinal System titanium, cobalt chrome, and stainless-steel implants may also be used for the same indications as an adjunct to fusion. With the exception of DDD, CD Horizon™ Legacy™ 3.5mm rods and associated components may be used for indications in skeletally mature patients as an adjunct to fusion. The 3.5mm rods may be used for the specific pediatric indications noted. When used for posterior non-cervical pedicle screw fixation in pediatric patients, CD Horizon™ Spinal System titanium, cobalt chrome, and stainless-steel implants are indicated as an adjunct to fusion to treat progressive spinal deformities (i.e. scoliosis, kyphosis, or lordosis) including idiopathic scoliosis, neuromuscular scoliosis, and congenital scoliosis. Additionally, the CD Horizon™ Spinal System is intended to treat pediatric patients diagnosed with the following conditions: spondylolisthesis/spondylolysis, fracture caused by tumor and/or trauma, pseudarthrosis, and/or failed previous fusion. These devices are to be used with autograft and/or allograft. Pediatric pedicle screw fixation is limited to a posterior approach. The CD Horizon™ PEEK rods are intended to provide posterior supplemental fixation when used with an interbody fusion cage for patients diagnosed with DDD. These DDD patients may also have up to Grade 1 spondylolisthesis or retrolisthesis at the involved level. This device is intended for 1-2 level use in the lumbosacral spine (L2 – S1) in skeletally mature patients. Devices are intended for use with an interbody fusion cage at the instrumented level and is not intended for stand-alone use. The CD Horizon™ Spire™ plate is a posterior, single-level, non-pedicle supplemental fixation device intended for use in the non-cervical spine (T1-S1) as an adjunct to fusion in skeletally mature patients. It is intended for plate fixation/attachment to spinous processes for the purpose of achieving supplemental fixation in the following conditions: DDD, spondylolisthesis, trauma, and/or tumor. To achieve additional levels of fixation, CD Horizon™ Spinal System rods may be connected to the Vertex™ Reconstruction System with the Vertex™ rod connector. Refer to the Vertex™ Reconstruction System package insert for a list of Vertex™ indications.</p> <p><b><u>Medtronic Reusable Instruments for use with IPC™ Powerease™ System</u></b></p> |
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|  | <p>The IPC™ System is indicated for the incision/cutting, removal, drilling and sawing of soft and hard tissue and bone, and biomaterials in Neurosurgical (Cranial, Craniofacial), Orthopedic, Arthroscopic, Spinal, Sternotomy, and General surgical procedures.</p> <p>The IPC™ Powerease™ System is indicated for drilling, tapping, and driving screws and working end attachments during spinal surgery, including open and minimally invasive procedures. It is also used in placement or cutting of screws, posts, and rods.</p> <p><b><u>Medtronic Navigated Reusable Instruments for use with the StealthStation™ System and IPC™ Powerease™ Systems</u></b></p> <p>Medtronic Navigated Reusable Instruments are intended to be used during the preparation and placement of Medtronic screws during spinal surgery to assist the surgeon in precisely locating anatomical structures in either open, or minimally invasive, procedures. Medtronic Navigated Reusable Instruments are specifically designed for use with the StealthStation™ System, which is indicated for any medical condition in which the use of stereotactic surgery may be appropriate, and where reference to a rigid anatomical structure, such as a skull, a long bone, or vertebra can be identified relative to a CT or MR-based model, fluoroscopy images, or digitized landmarks of the anatomy. Medtronic Navigated Reusable Instruments are also compatible with the IPC™ Powerease™ System.</p> <p><b>(Please note:</b> There are no new Navigated Instruments as a part of this submission. Medtronic would like to claim compatibility of the subject shanks with Navigated Instruments cleared in Predicate 1 (K221244 S.E, 05/25/2022) and Predicate 6 (K210637 S.E, 04/30/2021). The Description and Indications for Use for the StealthStation™ in this section is provided for reference.)</p> |
| <p><b>VI. Comparison of Technological Characteristics with the Predicate Devices</b></p> | <p>The subject devices have the same intended use, indications for use, materials, similar overall design, fundamental technology, sterilization, and surgical technique as the following CD Horizon™ Spinal System predicates:</p> <ul style="list-style-type: none"><li>• K221646, S.E. 10/04/2022</li><li>• K162379, S.E 11/16/2016</li><li>• K113174, S.E. 11/21/2011</li><li>• K210637, S.E, 04/30/2021</li><li>• K201407, S.E. 09/10/2020</li><li>• K042025, S.E. 08/25/2004</li><li>• K221244, S.E. 05/25/2022</li></ul> <p>The difference between the subject device and the Primary predicate is that some</p>  |

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|                              | <p>shanks contain the Titan nanoLOCK™ surface technology. However, this surface technology is identical to the nanoLOCK™ surface technology used for the devices cleared in K214010, S.E. 04/12/2022</p> <p>The subject and predicate implants and instruments have the same function and fundamental scientific technology.</p>   |
| <b>VII. Performance Data</b> | <p>In accordance with the Guidance for Industry and FDA Staff – Spinal System 510(k)'s, Medtronic has evaluated the subject devices to demonstrate substantial equivalence to the predicate devices.</p> <p>The subject devices have been tested or rationalized based on if Medtronic believes that testing is not warranted for the subject devices as they do not present a new worst case when compared to the predicates.</p> <p>The mechanical tests that were performed per ASTM F1717 include Static Compression, Static Torsion, Compression Fatigue, per ASTM F1798 include Axial Grip, Axial Torsion, Flexion Extension Static, Flexion Extension Fatigue, and per ASTM F2193 include screw bending static and screw bending fatigue. For the tested subject devices, the pre-determined acceptance criteria have been met for all tests.</p> <p>For subject devices that are rationalized, all existing predicate data previously provided in the predicate 510(k)s is still applicable. Therefore, Medtronic believes design verification testing demonstrated that the subject devices are substantially equivalent to the predicate devices. Design validation has also been performed and demonstrated that the subject devices performed as intended.</p> |
| <b>VIII. Conclusion</b>      | <p>Based on the supporting evidence provided in this premarket notification, Medtronic believes the subject devices are substantially equivalent to the predicate devices.</p>   |