

## Section. 6 510(k) Summary

Company Name: Cardiovascular Systems, Inc.  
651 Campus Drive  
Saint Paul, MN 55112

Contact: Blair Buth

Phone: (651) 259-2032

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Summary Date: November 05, 2013

Trade Name: Diamondback 360<sup>®</sup> Peripheral Orbital Atherectomy System

Product Code: MCW—Catheter, Peripheral, Atherectomy

Classification Regulation: 21 CFR 870.4875—Intraluminal Artery Stripper

Classification: II

Predicate Device:

510(k) Number: K110389, K122987, & K131092  
Manufacturer: Cardiovascular Systems, Inc.  
Trade Name: Stealth 360<sup>®</sup> Orbital PAD System

### 6.1 Description of Device

The Diamondback 360 Peripheral Orbital Atherectomy System (OAS) is intended for use in the treatment of peripheral arteries and A-V graft (shunt) stenosis.

The OAS provides a method of removing stenotic material from peripheral arteries and A-V grafts. The Diamondback 360 uses an eccentrically rotating sanding surface (crown) to remove stenotic material on the vessel wall. The stenotic particles that are removed are small enough to be absorbed by the body.

The Diamondback 360 Peripheral Orbital Atherectomy System consists of the following components:

- 1) Orbital Atherectomy Device (OAD)
- 2) Atherectomy Guide Wire (e.g., ViperWire Advance)
- 3) Saline Infusion Pump (SIP)
- 4) Atherectomy Lubricant (e.g., ViperSlide)

## 6.2 Intended Use

The Diamondback 360 Peripheral Orbital Atherectomy System is a percutaneous orbital atherectomy system indicated for use as therapy in patients with occlusive atherosclerotic disease in peripheral arteries and who are acceptable candidates for percutaneous transluminal atherectomy.

The OAS supports removal of stenotic material from artificial arteriovenous dialysis fistulae (AV shunt). The OAS is a percutaneous orbital atherectomy system indicated as a therapy in patients with occluded hemodialysis grafts who are acceptable candidates for percutaneous transluminal angioplasty.

## 6.3 Technology

The Diamondback 360 Peripheral Orbital Atherectomy System provides a method of removing or reducing occlusive atherosclerotic or stenotic material. The OAS applies a diamond coated, eccentrically rotating sanding surface to remove stenotic material on the vessel wall. The stenotic particles that are removed are small enough to be absorbed by the body. This is the same technology that was cleared to market for use in the peripheral arteries for Stealth 360° in 510(k) K131092, K122987, K110389 and Predator 360° (originally cleared as 3X) per K090521.

## 6.4 Performance Data

Biocompatibility testing for the modified 1.25 Micro OAD (Diamondback 360 Peripheral Orbital Atherectomy System) has been completed. The biocompatibility test results show that the materials used in the design and manufacture of the components of the proposed device are non-toxic and non-sensitizing to biological tissue consistent with its intended use. The following biocompatibility tests were completed.

- Cytotoxicity
- Sensitization
- Irritation
- Acute Systemic Toxicity
- Pyrogenicity
- Hemocompatibility

The modified 1.25 Micro OAD (Diamondback 360 Peripheral Orbital Atherectomy System) was evaluated using the following performance bench testing to confirm the performance characteristics as compared to the predicate device.

- System Life Testing
- Stall Testing
- Introducer Compatibility Testing
- Contrast Injection Testing
- Temperature Testing
- Tensile Testing
- Flexibility Testing

- Delivered Torque Testing
- Orbit Testing
- Guide Wire Brake Testing
- Flow Testing
- Track Testing
- Packaging/Simulated Distribution Testing

All test results demonstrate that the materials chosen, the manufacturing process, and the design utilized for the modified 1.25 Micro OAD (Diamondback 360 Peripheral Orbital Atherectomy System) met the established specifications necessary for consistent performance during its intended use.

## **6.5 Conclusions**

The Diamondback 360 Peripheral Orbital Atherectomy System met all predetermined acceptance criteria of design verification and validation testing as specified by applicable standards, test protocols, and/or customer inputs. Testing results demonstrate that the Diamondback 360 Peripheral Orbital Atherectomy System is substantially equivalent to the legally marketed predicate device and does not raise any new safety or effectiveness questions.



November 22, 2013

Cardiovascular Systems, Inc.  
Mr. Blair Buth  
Regulatory Affairs Manager  
651 Campus Drive  
St. Paul, MN 55112

Re: K133399

Trade/Device Name: Diamondback 360 Peripheral Orbital Atherectomy System  
Regulation Number: 21 CFR 870.4875  
Regulation Name: Intraluminal Artery Stripper  
Regulatory Class: Class II  
Product Code: MCW  
Dated: November 5, 2013  
Received: November 6, 2013

Dear Mr. Buth:

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. 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

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CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address

<http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to

<http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm> for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address

<http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>.

Sincerely yours,

**Bram D. Zuckerman -S**

Bram D. Zuckerman, M.D.  
Director  
Division of Cardiovascular Devices  
Office of Device Evaluation  
Center for Devices and Radiological Health

Enclosure

**Section. 5    Indications for Use Statement**

**510(k) Number:** K133399

**Device Name:** Diamondback 360® Peripheral Orbital Atherectomy System

**Indications for Use:**

The Diamondback 360 Peripheral Orbital Atherectomy System is a percutaneous orbital atherectomy system indicated for use as therapy in patients with occlusive atherosclerotic disease in peripheral arteries and who are acceptable candidates for percutaneous transluminal atherectomy.

The OAS supports removal of stenotic material from artificial arteriovenous dialysis fistulae (AV shunt). The OAS is a percutaneous orbital atherectomy system indicated as a therapy in patients with occluded hemodialysis grafts who are acceptable candidates for percutaneous transluminal angioplasty.

Prescription Use   X    
(Part 21 CFR 801 Subpart D)

AND/OR

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

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Concurrence of CDRH, Office of Device Evaluation (ODE)

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