



Rethink Remanufacture

Irrigated ablation catheters and
catheters with a 3D mapping function

We set standards in medical remanufacturing

Vanguard stands for innovative, pioneering and certified medical remanufacturing methods since 1998. Our high standards have established Vanguard as the market leader in Europe.

Vanguard enables a circular economy for innovative medical devices empowering medical institutions to make their services more sustainable and future-proof. The result is a reduced impact on resources, the climate and their budget – with no compromise on safety or functionality.

By remanufacturing irrigated ablation and 3D mapping catheters Vanguard sets new standards for medical remanufacturing.

Medical Remanufacturing
reduces carbon footprints by
over 50% and resource use
by over 28%.*



Sustainable device solutions of the highest level

Remanufacturing complex medical devices places high demands on the remanufacturing process.

To ensure that a remanufactured device meets the quality standards of a new device Vanguard's research and development department examines the new devices and determines the technical device specifications using reverse-engineering processes.

On this basis we develop our medical remanufacturing processes carefully and check the results. By doing this we guarantee technical, functional, hygienic and biological safety and ensure that remanufactured devices are equivalent to the original ones.

* Anna Schulte et al., 'Combining Life Cycle Assessment and Circularity Assessment to Analyze Environmental Impacts of the Medical Remanufacturing of Electrophysiology Catheters', Sustainability 2021, 13(2), 898.

A process you can **rely on**

Usually the challenge when remanufacturing irrigated ablation catheters is cleaning the long, very narrow lumen in the catheter shaft and the occasionally narrow cross sections in the irrigation ports making sure there is no residue left.

When remanufacturing electrophysiology catheters with a 3D mapping function the electronic storage chips and magnetic-field sensors demand extra attention.

We do not make any compromises on functionality or safety. All cleaning machines, workstations and test stations are the result of many years of research and development. They are precisely aligned with the individual requirements for remanufacturing complex medical devices.

Our catheters are subjected to more than 20 individual tests.



PATENTED CLEANING PROCESS

We use a specially developed and patented cleaning machine to flush out any residues in the lumen. There is also start-to-finish volumetric monitoring of the media that is flushed through the lumen.



VISUAL ASSESSMENT

We inspect the device at up to 40x magnification checking for any changes in its curvature shape or damage along the full length of the catheter from the electrical connection to the tip.



MECHANICAL FUNCTION ASSESSMENT

We test the performance of each component. In the case of force-sensing catheters our processes ensure full functionality.



VANGUARD PRODUCT VERIFICATION

Assessment of electrical functionality such as isolation, continuity, capacity and temperature sensors using a specially developed testing system.



MICROBIOLOGICAL TESTING

To confirm the effectiveness of the cleaning process each catheter is checked for possible protein residues in our level-two hygiene Vanguard laboratory using the modified OPA method (in accordance with ISO 15883).



SEAL CHECK

Check to ensure that the catheter and Luer fitting are sealed and tight. Assessment of the seal in the electrode area by checking air pressure resistance and seal check on the locked Luer connector.



LEACHING

The shaft is irrigated and catheter lumen flushed out.



FLOW CHECK

Gas flow measurement to assess the flow (with compressed air).

Sustainability is key

Vanguard extends the product life cycle of catheters, offering a sustainable and economical alternative to the OEM's products.

Our Carto3 portfolio includes steerable Carto diagnostic catheters, navigated Carto ablation catheters as well as navigated Carto diagnostic catheter and ablation catheter packages that include reference patches for the Carto3 system.

Alongside remanufactured diagnostic and ablation catheters for the Carto3 system, Vanguard now also offers an environmentally friendly and economical alternative for all users of Abbott's EnSite Precision System.

Over **100,000**
remanufactured ablation
catheters in the last
five years!



Clinical support from **VANGUARD**

Our clinical support enables you to operate your EP Lab independently.

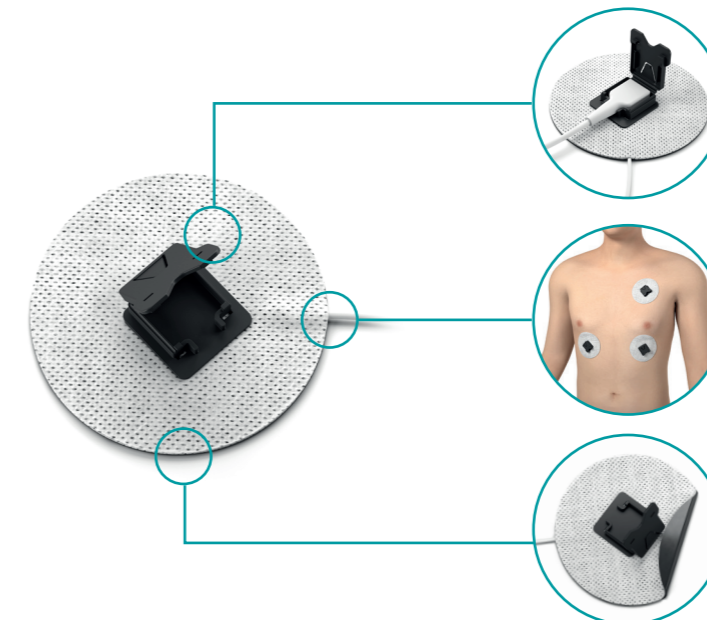
- Our clinical support team has years of experience performing diagnostic catheter examinations and is happy to provide you with advice and assistance.
- In addition to our intensive coaching for assistant physicians and nursing staff, we also provide on-site guidance for complex 3D mapping procedures.
- We offer workshops tailored to your individual needs.

Product overview: Carto3

VAN REF	OEM REF	OEM PRODUCT NAME	PRODUCT CATEGORY
NAVISTAR THERMOCOOL UNI-DIRECTIONAL			
34833	34H17M	NaviStar ThermoCool B-Curve	EP ablation catheters, irrigated, 3D mapping
34834	34H27M	NaviStar ThermoCool C-Curve	EP ablation catheters, irrigated, 3D mapping
34473	34H37M	NaviStar ThermoCool D-Curve	EP ablation catheters, irrigated, 3D mapping
34835	34H57M	NaviStar ThermoCool F-Curve	EP ablation catheters, irrigated, 3D mapping
34836	34HJ7M	NaviStar ThermoCool J-Curve	EP ablation catheters, irrigated, 3D mapping
NAVISTAR THERMOCOOL BI-DIRECTIONAL			
34758	36H35M	NaviStar ThermoCool DF-Curve	EP ablation catheters, irrigated, 3D mapping
34808	36H5JM	NaviStar ThermoCool FJ-Curve	EP ablation catheters, irrigated, 3D mapping
THERMOCOOL SF NAV UNI-DIRECTIONAL			
34471	D131802	ThermoCool SF NAV D-Curve	EP ablation catheters, irrigated SF, 3D mapping
34840	D131803	ThermoCool SF NAV F-Curve	EP ablation catheters, irrigated SF, 3D mapping
34841	D131804	ThermoCool SF NAV J-Curve	EP ablation catheters, irrigated SF, 3D mapping
THERMOCOOL SF NAV BI-DIRECTIONAL			
34469	BNI35DFH	ThermoCool SF NAV DF-Curve	EP ablation catheters, irrigated SF, 3D mapping
34805	BNI35BDH	ThermoCool SF NAV BD-Curve	EP ablation catheters, irrigated SF, 3D mapping
34806	BNI35BFH	ThermoCool SF NAV BF-Curve	EP ablation catheters, irrigated SF, 3D mapping
34807	BNI35FJH	ThermoCool SF NAV FJ-Curve	EP ablation catheters, irrigated SF, 3D mapping
34844	BNI35DDH	ThermoCool SF NAV DD-Curve	EP ablation catheters, irrigated SF, 3D mapping
THERMOCOOL SMARTTOUCH UNI-DIRECTIONAL			
35117	D133601	ThermoCool Smarttouch D-Curve	EP ablation catheters, irrigated, contact force, 3D mapping
35118	D133602	ThermoCool Smarttouch F-Curve	EP ablation catheters, irrigated, contact force, 3D mapping
35119	D133603	ThermoCool Smarttouch J-Curve	EP ablation catheters, irrigated, contact force, 3D mapping
THERMOCOOL SMARTTOUCH BI-DIRECTIONAL			
35123	D132701	ThermoCool Smarttouch DD-Curve	EP ablation catheters, irrigated, contact force, 3D mapping
35124	D132702	ThermoCool Smarttouch FF-Curve	EP ablation catheters, irrigated, contact force, 3D mapping
35125	D132703	ThermoCool Smarttouch JJ-Curve	EP ablation catheters, irrigated, contact force, 3D mapping
35126	D132704	ThermoCool Smarttouch FJ-Curve	EP ablation catheters, irrigated, contact force, 3D mapping
35127	D132705	ThermoCool Smarttouch DF-Curve	EP ablation catheters, irrigated, contact force, 3D mapping

VAN REF	OEM REF	OEM PRODUCT NAME	PRODUCT CATEGORY
THERMOCOOL SMARTTOUCH SF UNI-DIRECTIONAL			
35120	D134701	ThermoCool Smarttouch SF D-Curve	EP ablation catheters, irrigated SF, contact force, 3D mapping
35121	D134702	ThermoCool Smarttouch SF F-Curve	EP ablation catheters, irrigated SF, contact force, 3D mapping
35122	D134703	ThermoCool Smarttouch SF J-Curve	EP ablation catheters, irrigated SF, contact force, 3D mapping
THERMOCOOL SMARTTOUCH SF BI-DIRECTIONAL			
35128	D134801	ThermoCool Smarttouch SF DD-Curve	EP ablation catheters, irrigated SF, contact force, 3D mapping
35129	D134802	ThermoCool Smarttouch SF FF-Curve	EP ablation catheters, irrigated SF, contact force, 3D mapping
35130	D134803	ThermoCool Smarttouch SF JJ-Curve	EP ablation catheters, irrigated SF, contact force, 3D mapping
35131	D134804	ThermoCool Smarttouch SF FJ-Curve	EP ablation catheters, irrigated SF, contact force, 3D mapping
35132	D134805	ThermoCool Smarttouch SF DF-Curve	EP ablation catheters, irrigated SF, contact force, 3D mapping

Vanguard Reference Patches (Suitable for CARTO® 3)



SAFE SENSOR CONNECTION

The clip was developed to prevent the unintended detachment of the sensor e.g. due to patient or cable movement.

SPACE SAVING DESIGN

The patches offer greater flexibility and more space during use, e.g. for additional cables and hoses, and especially for older patients with smaller thoraxes.

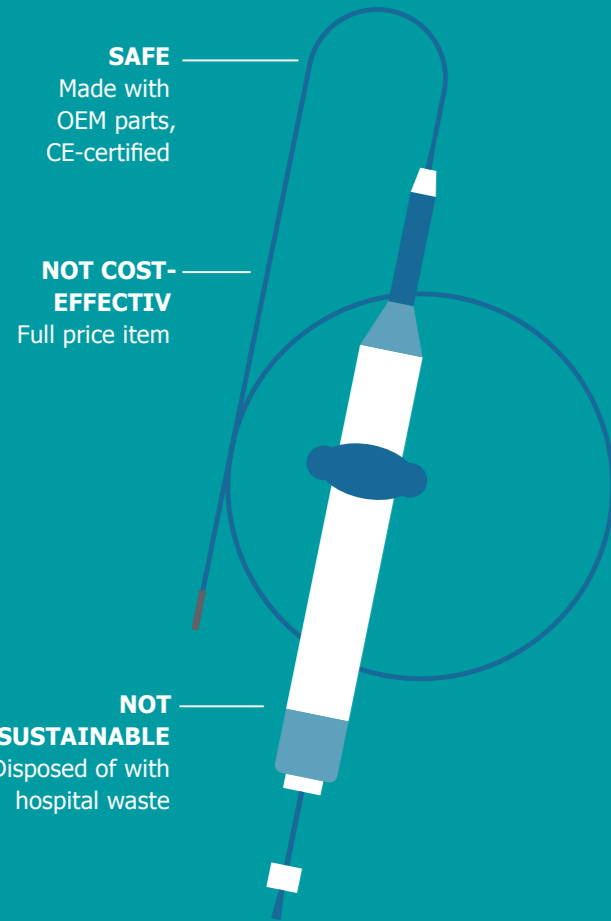
EXCELLENT ADHESIVE PROPERTIES

The patches provide safe holding properties for any application situation, even after they have been repositioned.

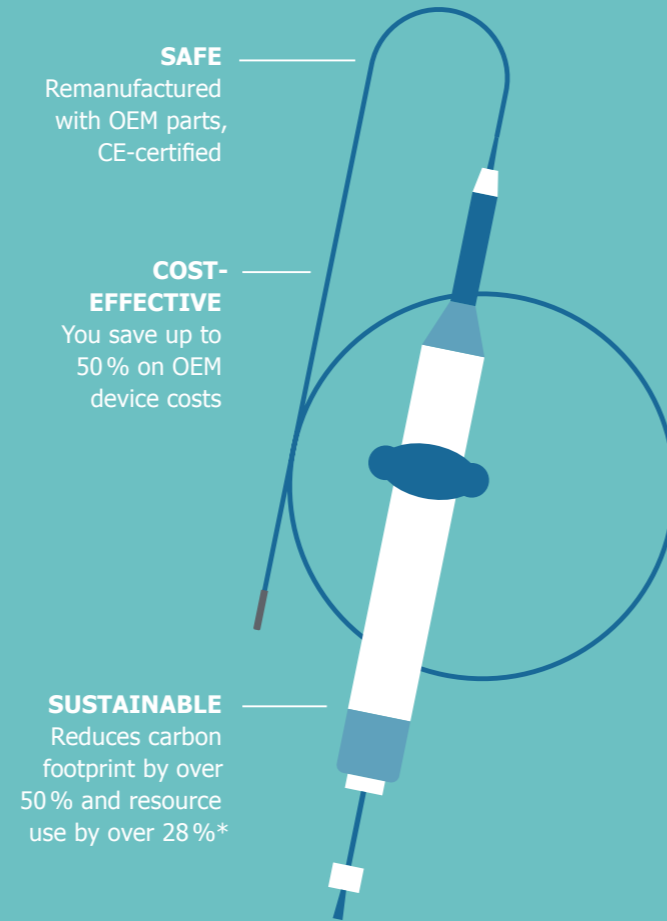
VAN REF	OEM REF	ELECTRODE DIAMETER	CABLE LENGTH	PACKAGING UNIT
35802	CREFP6	80 mm	800 mm	6 pieces

What is the difference?

Original device



Remanufactured by Vanguard



Product overview: EnSite Precision

VAN REF	OEM REF	OEM PRODUCT NAME	PRODUCT CATEGORY
FLEXABILITY SE UNI-DIRECTIONAL			
35104	A-FASE-D	FlexAbility SE 8F D-Curve, 4 mm	EP ablation catheters, irrigated SF, 3D mapping
35105	A-FASE-F	FlexAbility SE 8F F-Curve, 4 mm	EP ablation catheters, irrigated SF, 3D mapping
35106	A-FASE-J	FlexAbility SE 8F J-Curve, 4 mm	EP ablation catheters, irrigated SF, 3D mapping
FLEXABILITY SE BI-DIRECTIONAL			
35107	A-FASE-DD	FlexAbility SE 8F DD-Curve, 4 mm	EP ablation catheters, irrigated SF, 3D mapping
35108	A-FASE-DF	FlexAbility SE 8F DF-Curve, 4 mm	EP ablation catheters, irrigated SF, 3D mapping
35109	A-FASE-FF	FlexAbility SE 8F FF-Curve, 4 mm	EP ablation catheters, irrigated SF, 3D mapping
35110	A-FASE-FJ	FlexAbility SE 8F FJ-Curve, 4 mm	EP ablation catheters, irrigated SF, 3D mapping
35111	A-FASE-JJ	FlexAbility SE 8F JJ-Curve, 4 mm	EP ablation catheters, irrigated SF, 3D mapping



Come on a tour of our **workshop**

Convince yourself on-site of the innovative proprietary process technology that provides safe and validated procedures for the professional remanufacturing of medical devices!

We look forward to seeing you.

Simply contact us by calling or emailing to discuss a preferred date:

T 00800 82648273

M service@vanguard.de

vanguard.de

VANGUARD AG Landsberger Str. 266 • 12623 Berlin, Germany
VANGUARD Medical Devices Limited 5 Chancery Lane • London WC2A 1LG, UK
Customer service 00800 82648273 • service@vanguard.de



EnSite Precision[®]™, FlexAbility[®]™ and Sensor Enabled[®]™ are terms or trademarks that are used here and are protected by the original equipment manufacturer Abbott or a company affiliated with it. Carto[®], NaviStar[®], ThermoCool[®] and THERMOCOOL SMARTTOUCH[®] are terms or trademarks that are used here and are protected by the original equipment manufacturer Biosense Webster, Inc., or Biosense Webster EMEA, a division of Johnson & Johnson Medical N. V./S. A., or a company affiliated with the preceding entities.

