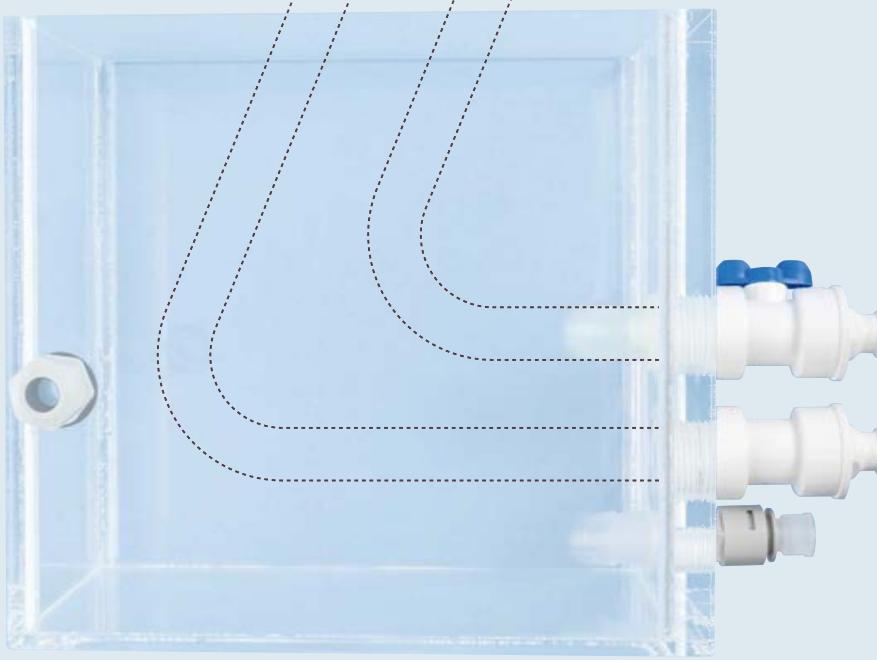
www.heartroid.com/

CE



HEARTROID®

MEDICAL TRAINING SYSTEM

Do practice not on a patient but ...

“HEARTROID”

“HEARTROID” is a catheterization simulator
offering procedural trainig
for interventional cardiologists
and medical students.

X-ray compatible

Practical training under
X-ray fluoroscopy

Fast & Easy preparation

Ready-to-use in just a few
minutes without
any technical knowledge

Portable

Inflight carry-on
baggage compatible

Any situation

In the cath lab, office,
conference hands-on
and anywhere

HEARTROID®PROJECT

MEDICAL TRAINING SYSTEM

HEARTROID®

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CORONARY

HEARTROID coronary series can facilitate many scenarios including simple CAG, PCI, Atherectomy, ACS, CTO, Bifucation strategy and some bail-out procedures under angiography visualized by camera and X-ray fluorosopy.

Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for Coronary

A heart model suitable for practical training in CAG and PCI under X-ray fluoroscopy in the cath lab. Stent deployment and guide wire manipulation can be simulated with this model.

2. Smart Tank for Coronary

3. HEARTROID Pump Type-I

Compatible with the following heart model

Coronary, TPVI, CSR, EP, CRT, AAA, EVT, RDN, EMB, NV

4. Tubes with Sheath
   Number of tubes : 2 (8Fr)
5. Lubricant
6. Hose

▶ See p.32 in details

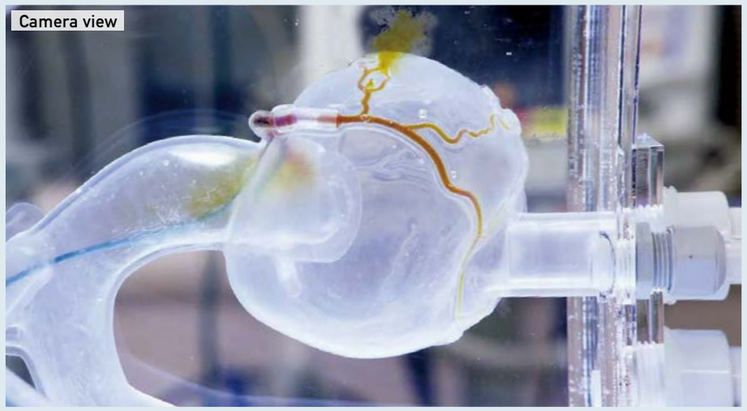
Standard Class

PCI Model

| Compatible procedures |

CAG	CABG	ACS	IVUS / OCT	FFR	Stent	Atherectomy
IVL	DCA	Bifurcation	CTO	Rupture	Coiling	

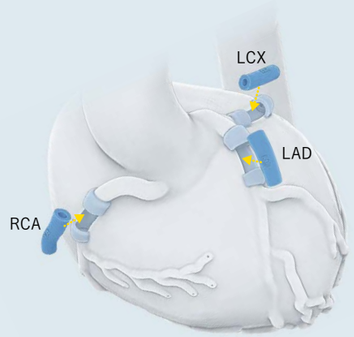
Web



Replaceable “Lesion parts” according to the procedures

HEARTROID Coronary series have sockets for attaching “Lesion parts”(except for CAG model). You can perform various training by replacing the “Lesion parts” according to the purpose.

▶ See p.9 in details

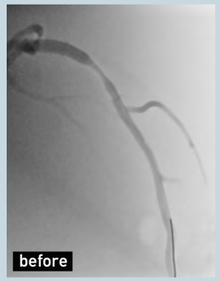


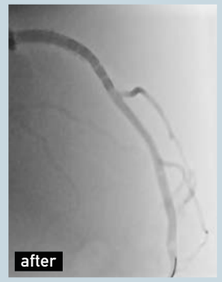
Easy to set up

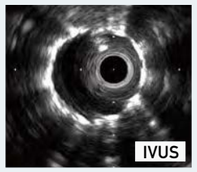
Recommended procedures

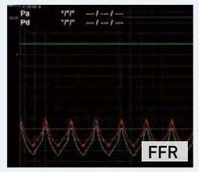
Stenting (Simple PCI procedure)

With “Soft Plaque” parts ▶ See p.9









This scenario shows a simple PCI; that is balloon dilatation followed by stent deployment. Imaging catheters (IVUS, OCT, Angioscopy) and FFR are also applicable. Training under X-ray fluoroscopy is more beneficial.

Atherectomy (Debulking procedures)

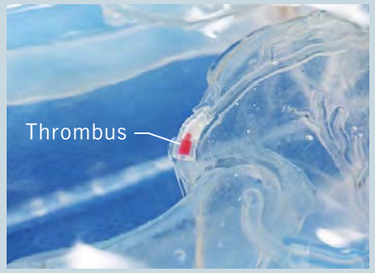
With “Concentric Calc” parts ▶ See p.9

Rotablation with HEARTROID

This scenario allows trainees to understand the strategy behind dealing with various lesions, especially severe calcification. With calcified vessel parts, one can practice the debulking technique with Rotablator and Directional Coronary Atherectomy (DCA) devices. Training under X-ray fluoroscopy is more beneficial.

ACS (Thrombectomy, balloon and stenting)

With “ACS” parts ▶ See p.9



This scenario facilitates emergent PCI strategy including thrombectomy followed by balloon dilatation and stent deployment. In successful case, you can see some thrombus in a syringe along with a nice final angiography.

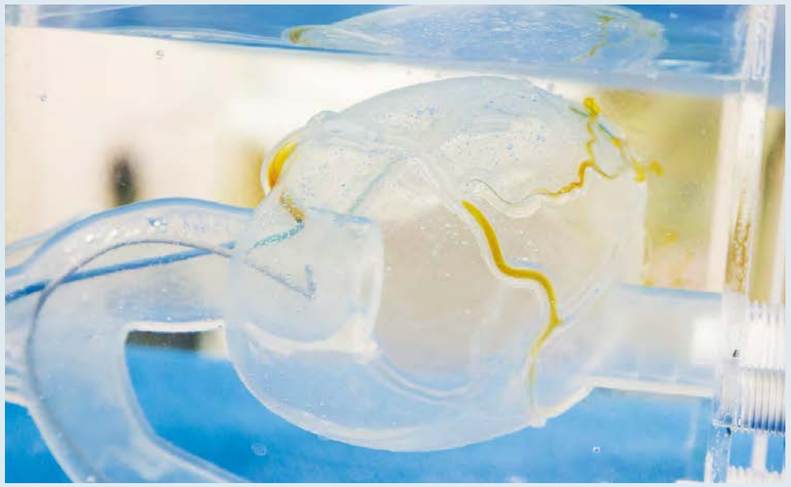
High-end Class

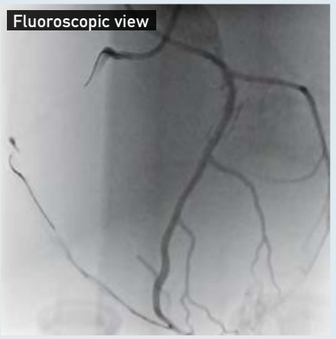
CTO Model

| Compatible procedures |

CAG	CABG	ACS	IVUS / OCT	FFR	Stent	Atherectomy
IVL	DCA	Bifurcation	CTO	Rupture	Coiling	

Web

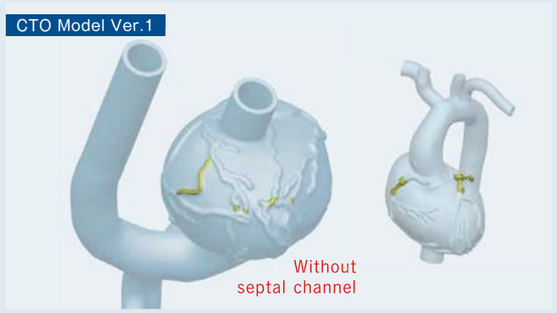


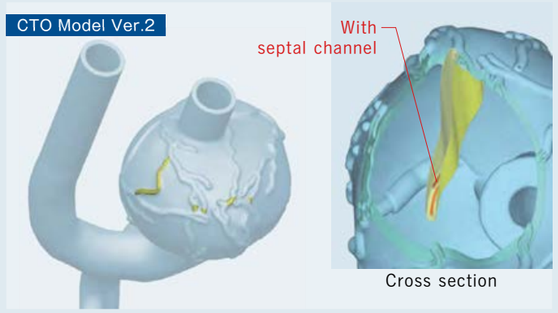


This is a chronic total occlusion (CTO) disease model. It features multiple collateral channels between LAD and RCA (including septal branch and apex routes), and between LCX and RCA (including AV groove and apex routes). The LAD, LCX and RCA have their own pockets, so that if the CTO vessel part is set in the RCA pocket, both the antegrade approach from RCA and the retrograde approach from LAD can be simulated, and vice versa.

With “CTO” parts ▶ See p.9

CTO Model lineup





See p.9 in details

The standard model includes one lesion proximal to each of LAD, LCX and RCA. For the collateral vessels, the apex and AV groove routes are available for Type 1, and the septal branch route for Type 2. By changing the position of the detachable coronary artery parts, the occluded vessel can be selected. For example, when CTO lesion part can be placed proximal to RCA, then an antegrade approach can be attempted from RCA side, followed by a retrograde approach from LAD side and vice versa.

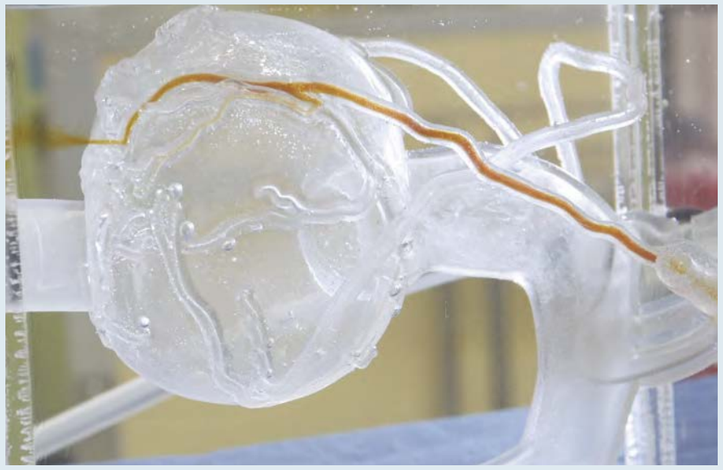
High-end Class

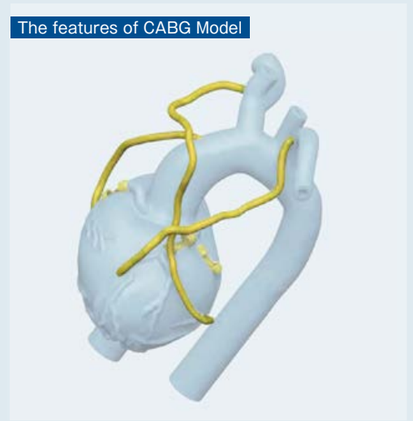
CABG Model

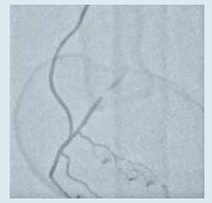
| Compatible procedures |

CAG	CABG	ACS	IVUS / OCT	FFR	Stent	Atherectomy
IVL	DCA	Bifurcation	CTO	Rupture	Coiling	

Web







This is a triple vessel disease model with a triple coronary artery bypass grafting (CABG) : LITA–mid LAD, RITA–LCX OM branch, and distal RCA. The native coronary artery has a severe stenosis in the proximal LAD, a severe stenosis in the proximal LCX, and also a severe stenosis in the mid RCA. This model is suitable for bypass graft angiography and PCI simulation for cases involving CABG.

Entry Class

CAG Model

| Compatible procedures |

CAG	CABG	ACS	IVUS / OCT	FFR	Stent	Atherectomy
IVL	DCA	Bifurcation	CTO	Rupture	Coiling	

Web

This system facilitates full procedures necessary in CAG (coronary angiography). It allows trainees to understand how to manipulate catheters, guidewires and contrast injectionunder camera and X-ray fluoroscopic view. Both transfemoral and transradial approach compatible. This entry model is suitable for young cardiologists, medical students and cath lab staffs' team simulation.

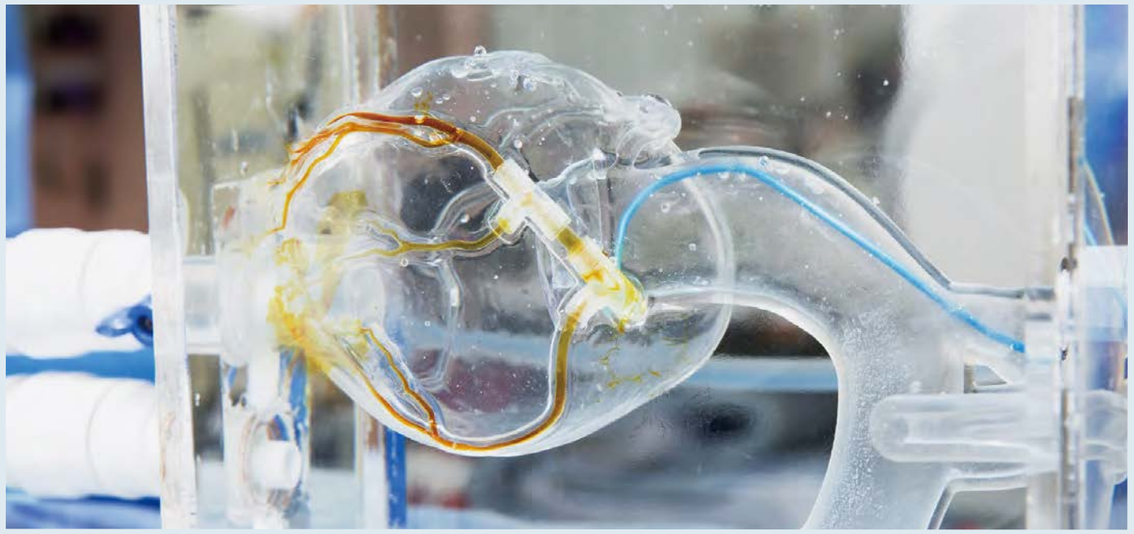
High-end Class

BIF Model

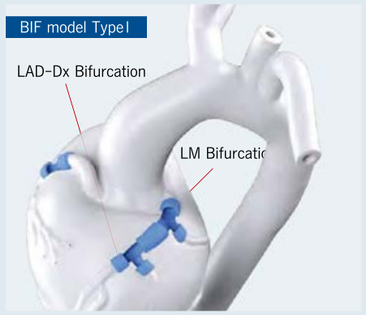
| Compatible procedures |

CAG | CABG | ACS | IVUS / OCT | FFR | Stent | Atherectomy
IVL | DCA | Bifurcation | CTO | Rupture | Coiling

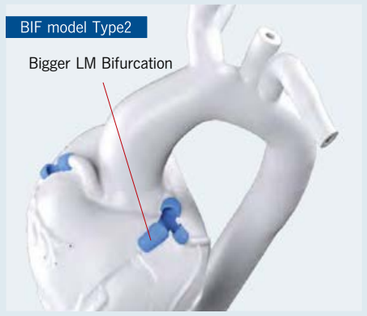
Web



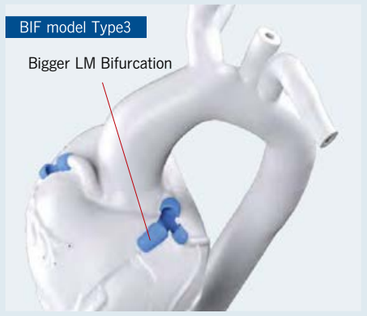
BIF model can facilitates the full procedures around LM (left main) bifurcation and LAD-Dx (diagonal branch) bifucarion strategies. Let's try T-stenting, Culotte, Crush, KBT and whatever you want!



LM bifurcation with LAD-Dx bifurcation



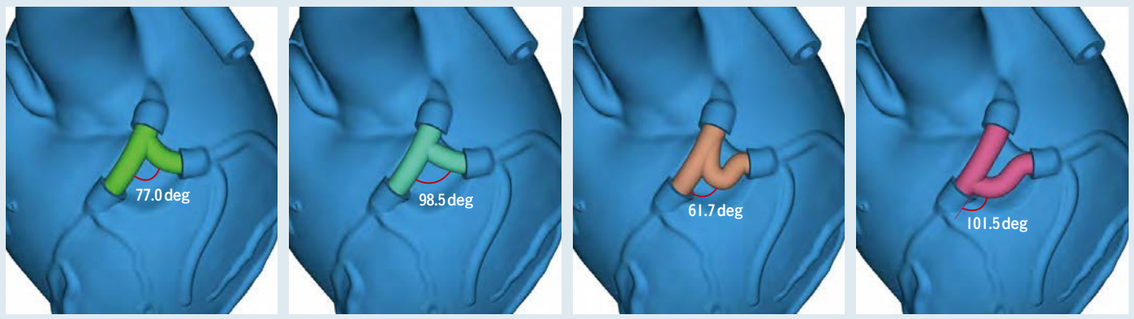
Bigger LM bifurcation

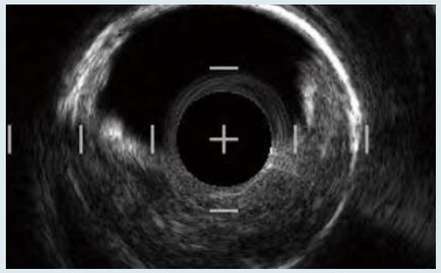


Flexibile bifurcation angles

▶ See the pictures below

Flexibility in bifurcation angles

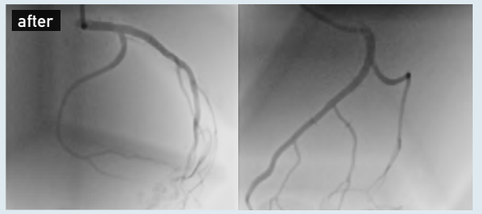




IVUS image of Coronary plaque in DCA parts

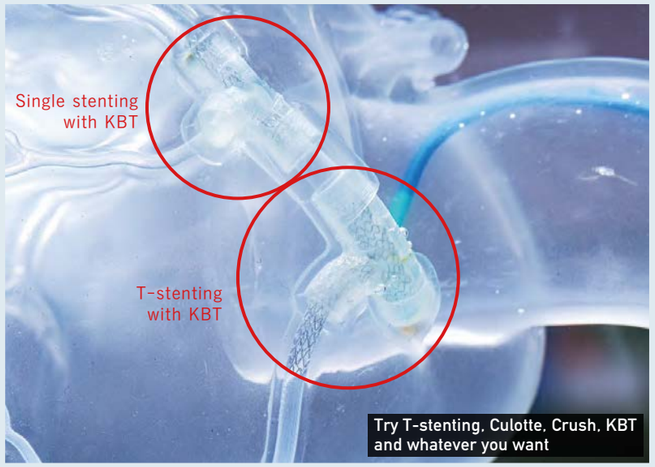
RAO CAU

LAO CRA



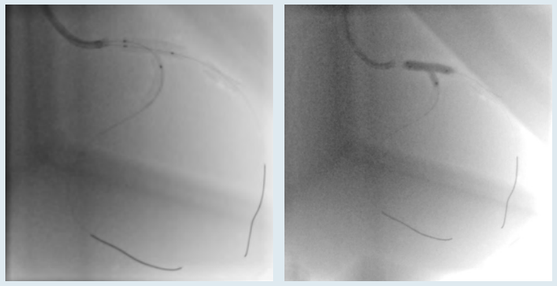
RAO CAU

LAO CRA



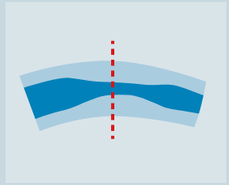
KBT (Kissing balloon technique)

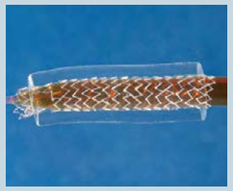
KBT & POT
with HEARTROID



BIF lesion parts (detachable & disporsable)

Lesion parts (detachable & disporsable)





Normal

75% stenosis with soft plaque suitable for direct stenting.

Soft plaque

75% stenosis with soft plaque suitable for direct stenting.

ACS

100% total occlusion easy to pass

CTO

Compatible with CTO Models only

100% total occlusion. (Hardness: level 1 to 5)

Concentric Calc

75% stenosis with concentric calcification suitable for Atherectomy.

Eccentric Calc

75% stenosis with eccentric calcification suitable for Atherectomy.

IVL

75% stenosis suitable for IVL

Rupture

For bail-out scenario "Coronary Rupture"

Normal BIF

Suitable for stenting under camera view

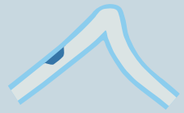
BIF soft plaque

Suitable for stenting under X-ray

BIF calcification

calcified lesion for both camera and X-ray

DCA



IVUS-visible soft plaque suitable for DCA.

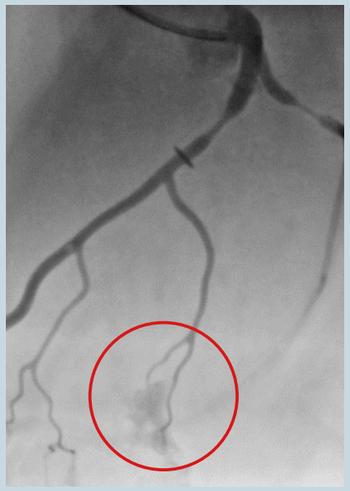
Compatible procedures

Class	Entry	Standard	High-end		
Model	CAG	PCI	CABG	CTO	BIF
Coronary angiography (CAG)	○	○	○	○	○
PCI/CAG for CABG			○		
Thrombectomy for ACS		○	○	○	
IVUS / OCT imaging		○	○	○	○
Fractal Flow Reserve (FFR)		○	○	○	○
Stent deployment		○	○	○	○
Atherectomy (Rotablation/OA)		○	○	○	○
Intravascular Lithotripsy (IVL)		○	○	○	○
Directional coronary atherectomy (DCA)					○
Bifurcation procedure KBT/Culotte & Crush stenting					○
Chronic total occlusion (CTO)				○	
Coronary rupture (covered stent)		○	○	○	○ *
Coiling for coronary perforation	○	○	○	○	○

* for RCA only

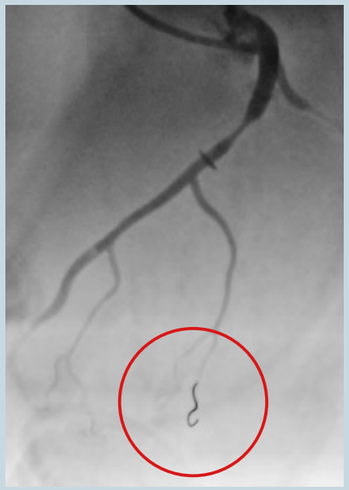
Recommended Bail-out procedures

Coiling for coronary perforation



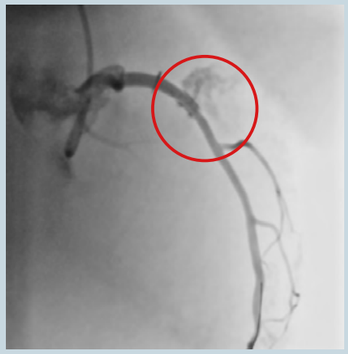
Coronary perforation

Coiling procedure

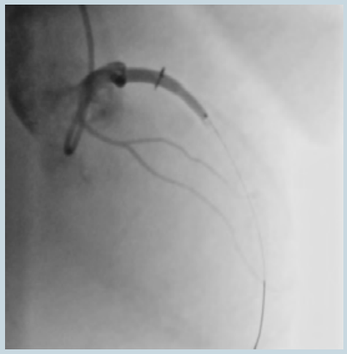


Successful coiling

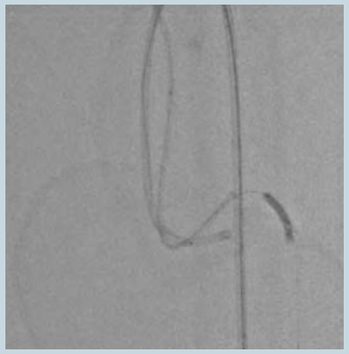
Ping-pong technique for coronary rupture



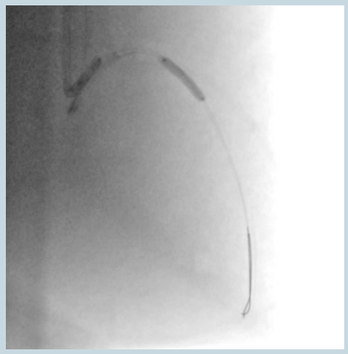
Coronary rupture



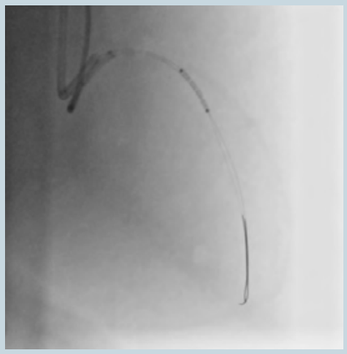
Balloon occlusion



Double guide catheter



Ping-pong technique



Covered stent

Successful stenting

TAVI Model

Web

Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for TAVI
Heart model suitable for practical training in TAVI under X-ray fluoroscopy in the cath lab.

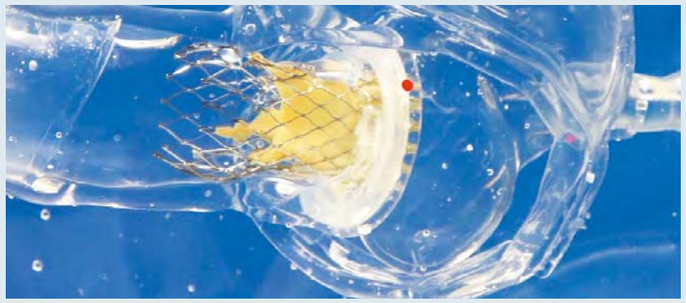
2. Valve parts
One of the valves shown below is included.

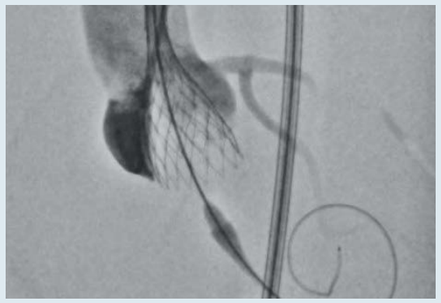
3. Smart Tank for TAVI

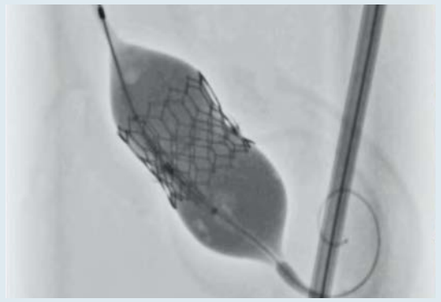
4. HEARTROID Pump Type-2
Compatible with the following heart model
TAVI, TPVI, VAD

5. Tubes with Sheath
Number of tubes : 2 (6・24Fr)
6. Lubricant
7. Hose

▶ See p.32 in details







HEARTROID TAVI model facilitates technical training for TAVI (Transcatheter Aortic Valve Implantation), a novel therapy for aortic valve stenosis. With a pulsatile pump included in the set, stent valve deployment under blood flow can be verified by simultaneous aortography. This system is appropriate for both balloon-expandable and self-expandable transcatheter stent valves. It is also applicable to both the TF and TA approach. It can be used under various circumstances, from hands-on seminars at an exhibition booth to simulation under X-ray fluoroscopy in the cath lab. The detachable aortic valve part enables quick preparation and effective training.

Valve implantation

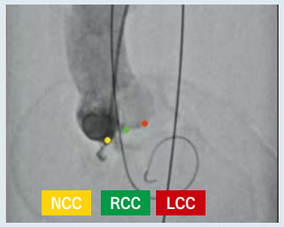
* Recommended angles when using TAVI model 37°.

Cusp Overlap Technique with HEARTROID

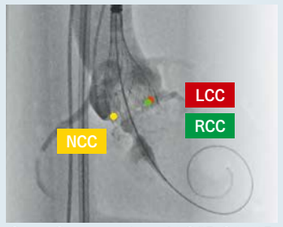
LAO Technique

LAO View LAO17 CAU10

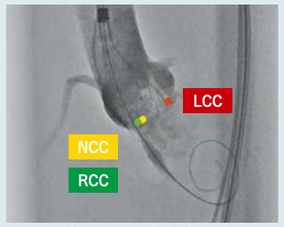
Cusp Overlap Techniquie



Native Coplanar View AP CAU10



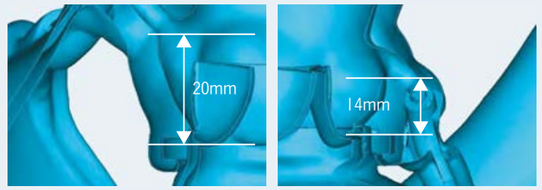
Cusp Overlap View RAO25 CAU15



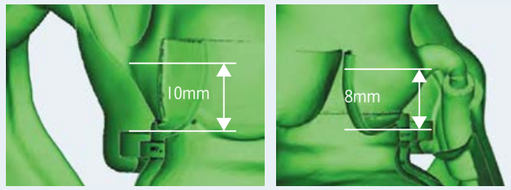
LAO View LAO17 CAU10

Coronary Height Variety

Normal Position RCA 20mm LCA 14mm (Type1)

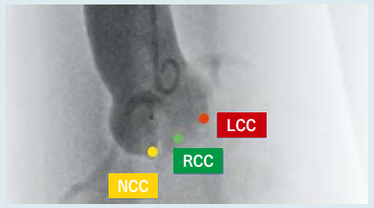


Lower Position RCA 10mm LCA 8mm (Type2)



Valve parts (detachable)

Aortic Stenosis Valve

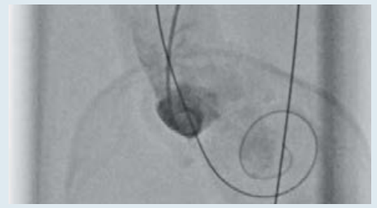


A detachable aortic valve with severe calcification.

Bicuspid Aortic Valve

A detachable aortic valve with raphe.

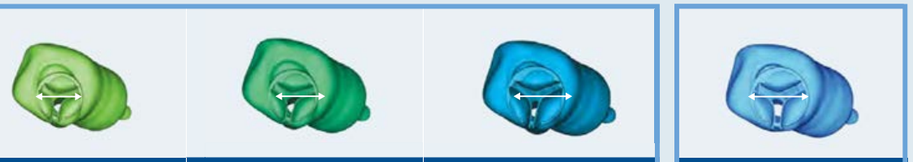
Aortic Regurgitation Valve



A detachable aortic valve without calcification.

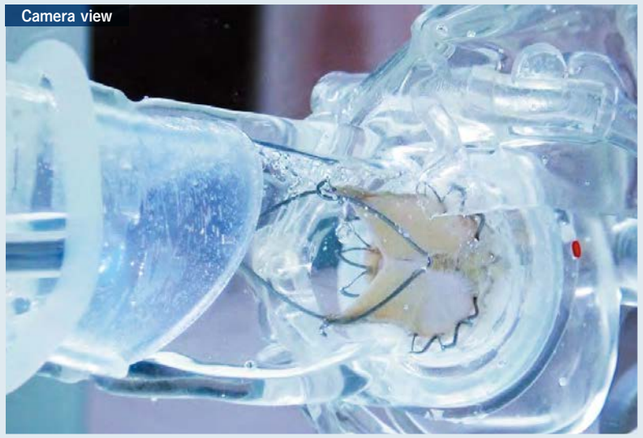
Aortic Valve variety

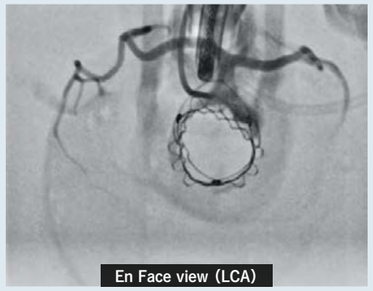
* Φ19 mm module is compatible only with the type 2 design of the heart body module

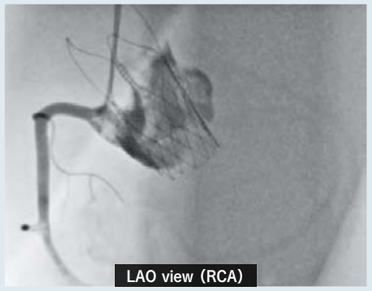


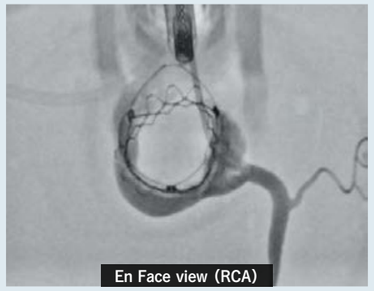
Aortic Annulus	19 mm	22 mm	25 mm	28 mm
Heart body	Type M			Type L

TAVI Videoscope Model (For Coronary access)





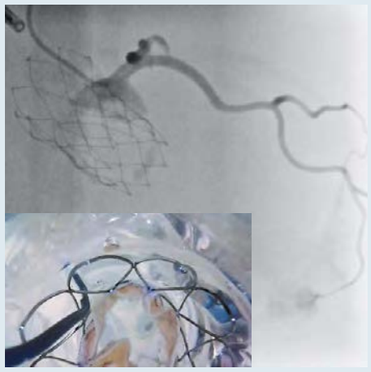




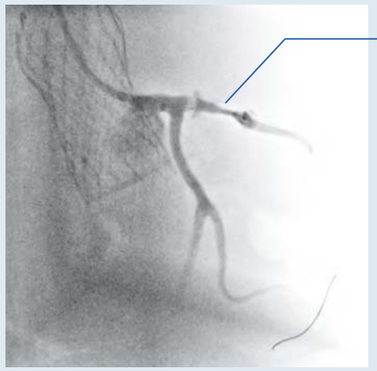
TAVI Videoscope Model can facilitate coronary access simulation training with a videoscope showing En Face view. This system can help interventional cardioplogists understand the catheter manipulation when coronary access is needed for post-TAVI patients. With X-ray furuoroscopy, one can compare the routine AP or LAO view and En Face view as shown above.

Coronary access & Post-TAVI PCI

Coronary access



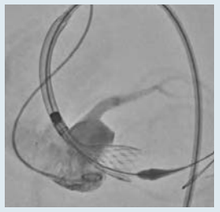
Post-TAVI PCI

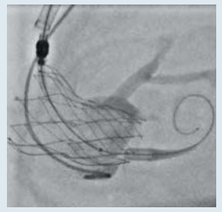


Judkins catheter with guide-extention cathter

TAVI Horizontal Model

Web

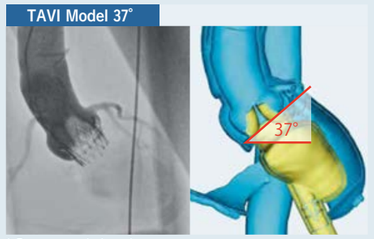




Horizontal aortic root anatomy causes difficuty in the valve positioning and delivery system retrieval process in TAVI procedure. This model has increased aortic angulation of 78° as measured between plane of aortic valve annulus and horizontal plane.

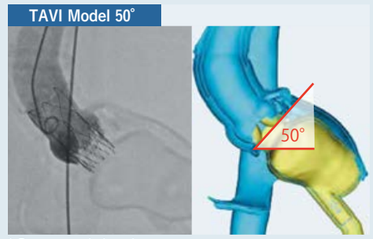
Aortic Anatomy variety

TAVI Model 37°



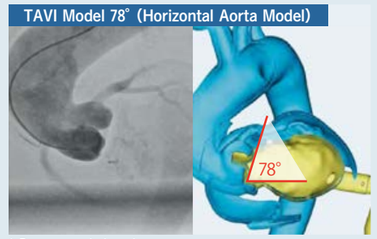
* Recommended angles
Coplanar view : AP CAU10
Cusp Overlap View : RAO25 CAU15

TAVI Model 50°



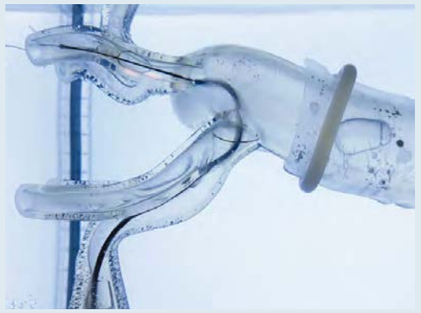
* Recommended angles
Coplanar view : AP CAU10
Cusp Overlap View : RAO13 CAU26

TAVI Model 78° (Horizontal Aorta Model)



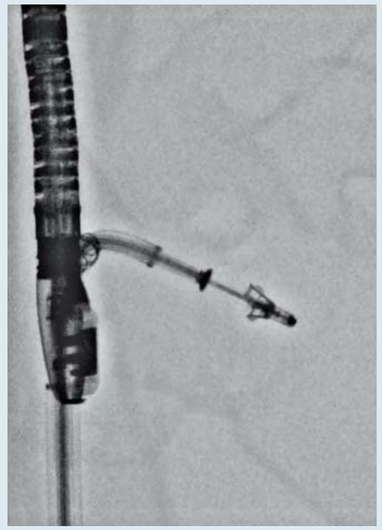
* Recommended angles
Coplanar view : LAO9 CAU19
Cusp Overlap View : RAO7 CAU44

TAVI CEP Model (For Cerebral Embolic protection)



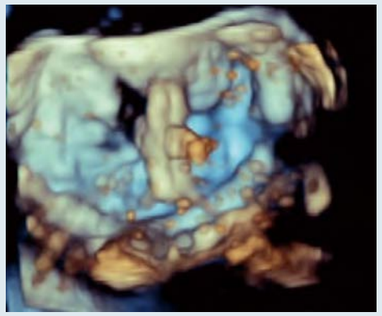
This model can facilitate the following series of simulation including 1. Cerebral embolic protection, 2. TAVI Valve implantation, 3. Post-TAVI coronary access & PCI (including pre-TAVI coronary protection) under X-ray fluoroscoy and camera view.
With Videoscope /
without videoscope

MV Model

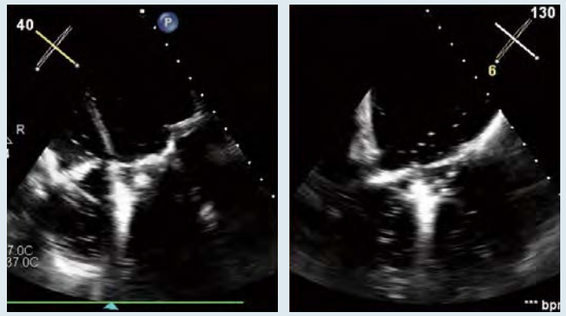


This model allows simulation training of percutaneous mitral valve clipping (TEER: transcatheter edge-to-edge repair) under fluoroscopy and transesophageal echocardiography guidance. The mitral valve has a removal design, and it opens and closes with the pulsatile flow produced by the pump.

3D echographic image



TEE image



Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for MV

An esophagus is attached to this heart model. The size and location of the MV can be changed upon request.

2. Smart Tank for MV

3. HEARTROID Pump Type-3

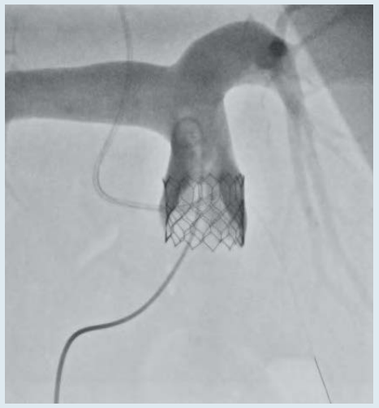
Compatible with the following heart model

MV, TSP/ASD/PFO, LAA, Leadless PM

4. Tube with Sheath
   Number of tubes : I (26Fr)
5. Lubricant
6. Hose

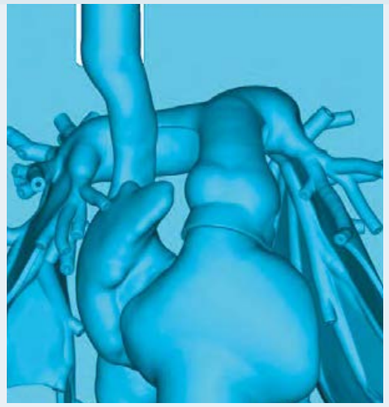
▶ See p.32 in details

TPVI Model



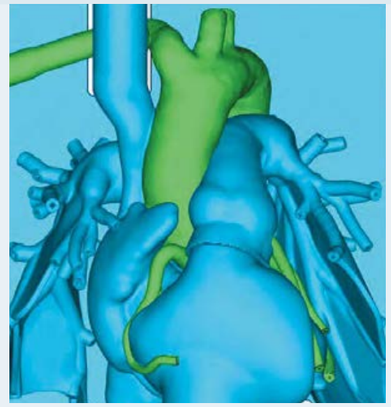
This model can facilitate TPVI (Transcatheter Pulmonary Valve Implantation) simulation training. Hybrid design, soft heart model with main pulmonary artery is connected with peripheral pulmonary arteries, realize a real tactile feeling during the procedure and sooth valve removal process after implantation. There are two types of models which can be used under X-ray fluoroscopy; TypeS (for self-expandable valve implantation) is equipped with aorta and coronary arteries and TypeB is suitable for balloon-expandable valve.

TypeS



TypeS for self-expandable valve

TypeB



TypeB for balloon-expandable valve

Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for TPVI

An esophagus is attached to this heart model. The size and location of the TPVI can be changed upon request.

2. Smart Tank for TPVI

3. HEARTROID Pump

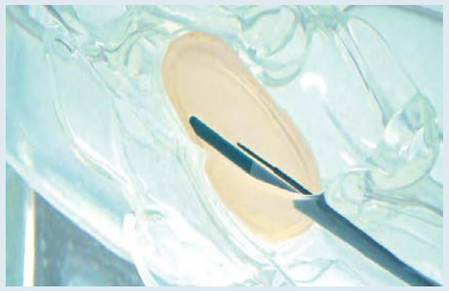
TPVI TypeS needs type2 pump only
TPVI TypeB needs both type1 and type2

4. Tube with Sheath
   Number of tubes : I (24Fr)
5. Lubricant
6. Hose

▶ See p.32 in details

TSP/ASD/PFO closure Model

TSP(Atrial septal puncture)



HEARTROID TSP model is designed for training in atrial septal puncture (TSP) procedure guided by imaging modalities such as X-ray fluoroscopy, transoesophageal ultrasound (TEE) and intracardiac echocardiography (ICE).
Camera images can help trainees plan where to puncture and actually confirm the punctured position following the procedure, allowing simulation training for the ideal puncture position according to the purpose, such as catheter ablation or SHD procedures. You can also learn how to navigate with ICE, how to move a steerable catheter and how to perform radiofrequency-based puncturing techniques.

TEE view

ICE view

Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for TSP/ASD/PFO closure
An esophagus is attached to this heart model. The size and location of the ASD can be changed upon request.
TSP, ASD Closure

2. Smart Tank for TSP/ASD/PFO closure

3. HEARTROID Pump Type-3
Compatible with the following heart model
MV, TSP/ASD/PFO, LAA, Leadless PM

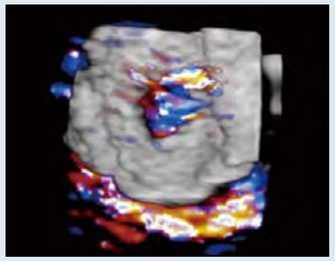
4. Tube with Sheath
Number of tubes : 2 (Y-shaped 16Fr)
5. Lubricant
6. Hose

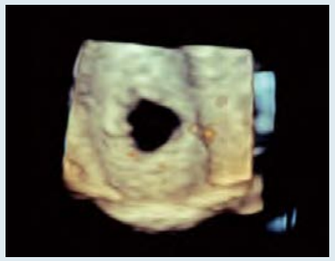
▶ See p.32 in details

TSP/ASD/PFO closure Model

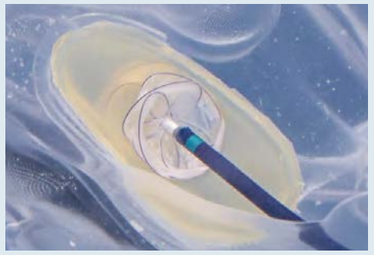
Web

ASD (atrial septal defect) closure





HEARTROID ASD closure model facilitates training for the ASD (atrial septal defect) closure procedure, a catheter-based operation for patients with congenital defects of the atrial septum. Guided by echocardiography, a delivery catheter can be inserted through the septal defect into the left atrium, and the closure device can be deployed across the ASD. As blood flow from the left atrium to the left ventricle is simulated, the location of the occluder can be confirmed by X-ray fluoroscopy during the procedure.



Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for TSP/ASD/PFO closure
An esophagus is attached to this heart model. The size and location of the ASD can be changed upon request.
TSP, ASD Closure

2. Smart Tank for TSP/ASD/PFO closure

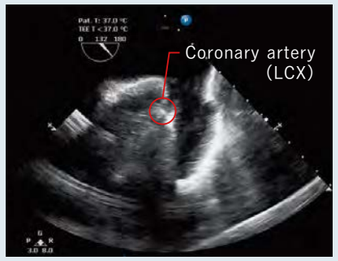
3. HEARTROID Pump Type-3
Compatible with the following heart model
MV, TSP/ASD/PFO, LAA, Leadless PM

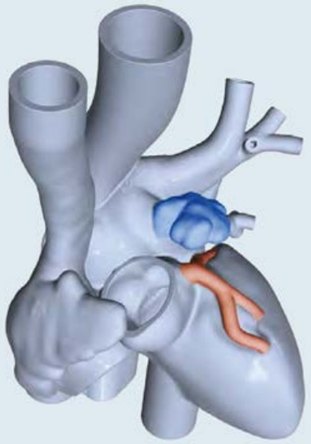
4. Tube with Sheath
Number of tubes : 2 (Y-shaped 16Fr)
5. Lubricant
6. Hose

▶ See p.32 in details

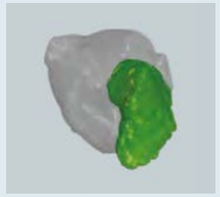
LAA Closure Model

Web



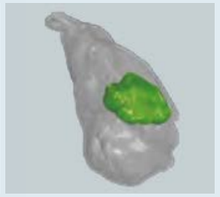


HEARTROID LAA closure model facilitates training for the LAA (left atrial appendage) closure procedure, a catheter-based operation for patients at risk of stroke due to atrial fibrillation. Guided by echocardiography, the delivery catheter can be inserted through the atrial septum and the occluder can be deployed in the LAA. Blood flow from the left atrium to the left ventricle is simulated, so the location of the occluder can be confirmed by X-ray fluoroscopy during the procedure.



Wind Sock model

Chicken Wing model



Broccoli model

* Wind Sock model LAA size variety Orifice diameter: 23mm and 32mm

Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for LAA Closure

The basic set includes a heart model with a wind sock type LAA. An esophagus is attached to this heart model. Major LAA types (Wind Sock, Chicken Wing, and Broccoli) can be selected upon request.

2. Smart Tank for LAA Closure

3. HEARTROID Pump Type-3

Compatible with the following heart model

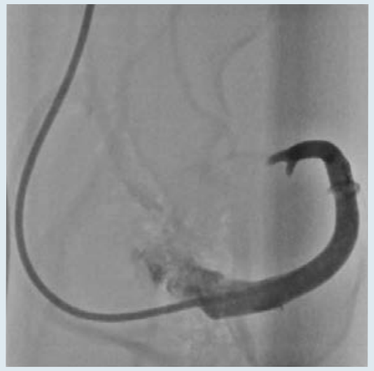
MV, TSP/ASD/PFO, LAA, Leadless PM

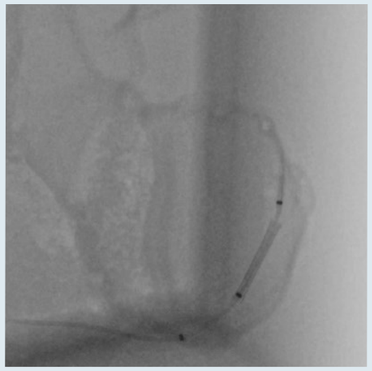
4. Tube with Sheath
   Number of tubes : 1 (24Fr)
5. Lubricant
6. Hose

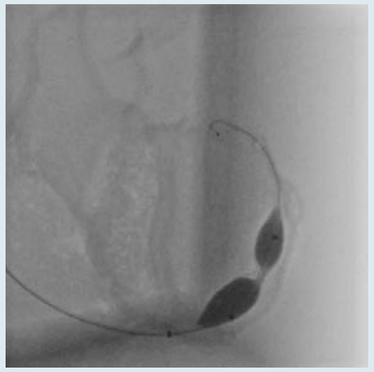
▶ See p.32 in details

CSR Model

HEARTROID CSR model is designed for training in Coronary Sinus Reducer deployment under X-ray fluoroscopy and camera view. This model can facilitate how to plan where to deploy the device and learn the entire procedure from coronary venography to safe removal of the delivery catheter through the simulation training. Coronary sinus part is removable and can be moved on to the next procedure immediately.







Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for CSR

2. Smart Tank for CSR

3. HEARTROID Pump Type-I

Compatible with the following heart model

Coronary, TPVI, CSR, EP, CRT, AAA, EVT, RDN, EMB, NV

4. Tubes with Sheath
   Number of tubes : 2 (Y-shaped 16Fr)
5. Lubricant
6. Hose

▶ See p.32 in details

EP Model

Web

Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

Hydrogel

1. Model for EP

Heart model suitable for EP training in TAVI under X-ray fluoroscopy in the cath lab.

2. Smart Tank for EP

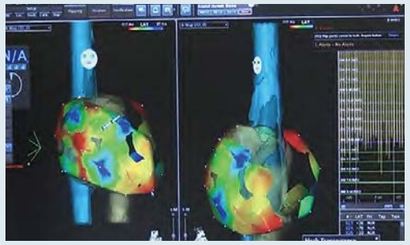
Silicon

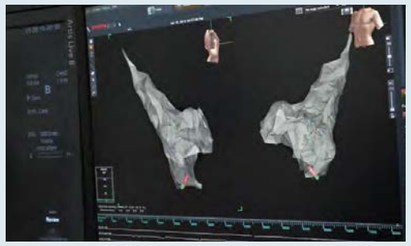
1. Model for EP

2. Smart Tank for EP

3. HEARTROID Pump Type-I
4. Tubes with Sheath
   Number of tubes :
   2 (Y-shaped 16Fr)
5. Lubricant
6. Hose

▶ See p.32 in details





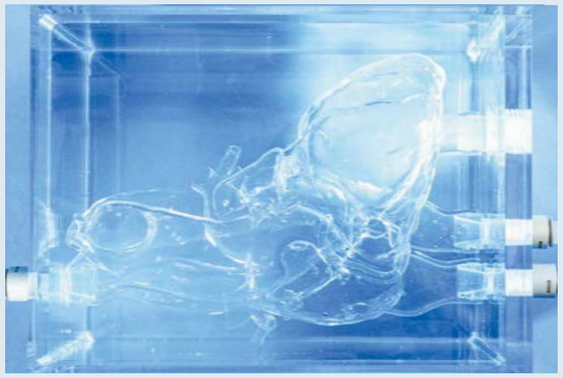
HEARTROID EP model facilitates technical training for catheter manipulation and 3D mapping, which are basic skills required for catheter ablation. With this model, the Brockenbrough Method (atrial septal puncture) guided by ICE (intracardiac echocardiography) can also be simulated. The model is appropriate for both the internal jugular and femoral vein approach.

Material

Hydrogel series

For Electromagnetic field and ICE imaging

Silicon series



For camera view

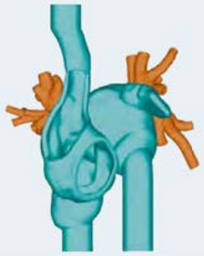
Geometry

Model size can be magnified or reduce depending your request.

Type-I

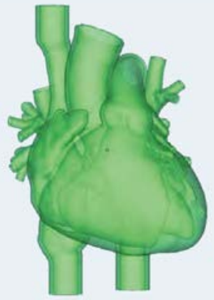
2-chamber design
RA and LA with
SVC, IVC

Type-I variant



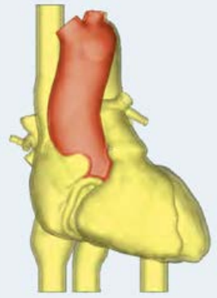
2-chamber design
Right PV : common trunk
Left PV : trifurcation

Type-2



4-chamber design
RA, LA, RV, LV with
SVC, IVC and CS

Type-3



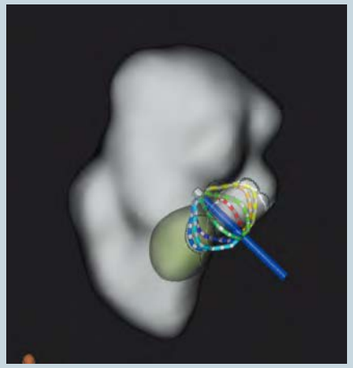
4-chamber design
with SVC, IVC and CS
for both retrograde
(arterial) and venous
approach

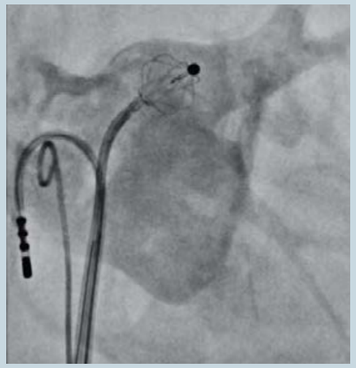
Compatible procedures

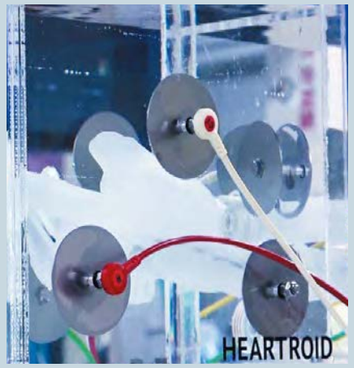
	Type1		Type2		Type3	
	2-ch		4-ch		venous and arterial approach	
	Silicon	Hydrogel	Silicon	Hydrogel	Silicon	Hydrogel
3D mapping (geometry creation)		✓		✓		✓
ICE imaging				✓		✓
PVI with cryoballoon	✓					
Lead implantation for coronary sinus and branches			✓		✓	

Recommended procedures

3D mapping (Geometry Creation)



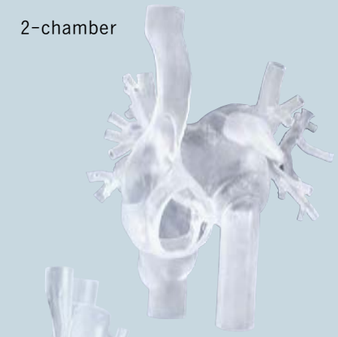




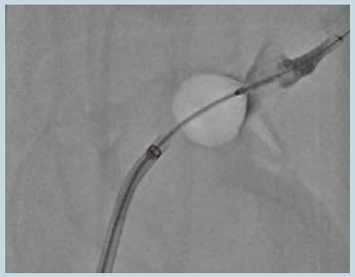
Hydrogel heart model with conductive property can facilitate the simulation of geometry creation process, which is the fundamental procedure for electrophysiologists. Type1 and 2 are designed to be accessed from IVC through atrial septum, and retrograde approach from the femoral artery is acceptable with Type3.

PVI (Cryoballoon ablation)

2-chamber



4-chamber



HEARTROID PVI model facilitates simulated training of a pulmonary vein isolation procedure, with or without X-ray visualization. During cryoballoon catheter ablation, the operator is able to check whether pulmonary vein flow is blocked appropriately using a pulsatile pump which is included in the standard set. This model features all four pulmonary veins (RSPV, RIPV, LSPV, LIPV), and ICE (intracardiac echocardiography) is usable when passing through the atrial septum.

CRT Model

Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for CRT

2. Smart Tank for CRT

3. HEARTROID Pump Type-I

Compatible with the following heart model

Coronary, TPVI, CSR, EP, CRT, AAA, EVT, RDN, EMB, NV

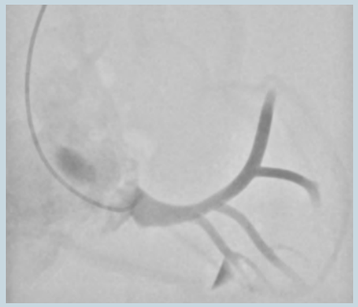
4. Tubes with Sheath
   Number of tubes : 2 (Y-shaped 16Fr)
   1 (10Fr)
5. Lubricant
6. Hose

▶ See p.32 in details

HEARTROID CRT (Cardiac Resynchronization Therapy) model is designed for training under X-ray fluoroscopy and camera view. This model can facilitate the simulation training of how to insert the intravenous leads from subclavian/axillary vein to the coronary sinus (CS), right ventricular apex and atrial septum.

Coronary venography can be realized with the pulsatile pump.
Each part of coronary sinus, right ventricular apex and atrial septum is removable and can be moved on to the next procedure immediately.

Lead implantation for coronary sinus and branches



Silicon-based transparent heart model with CS (coronary sinus) facilitates the lead implantation procedure under X-ray fluoroscopy and camera view. Coronary sinus and marginal veins can be visualized with contrast injection.

Leadless PM Model

Web

Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for Leadless PM

2. Smart Tank for Leadless PM

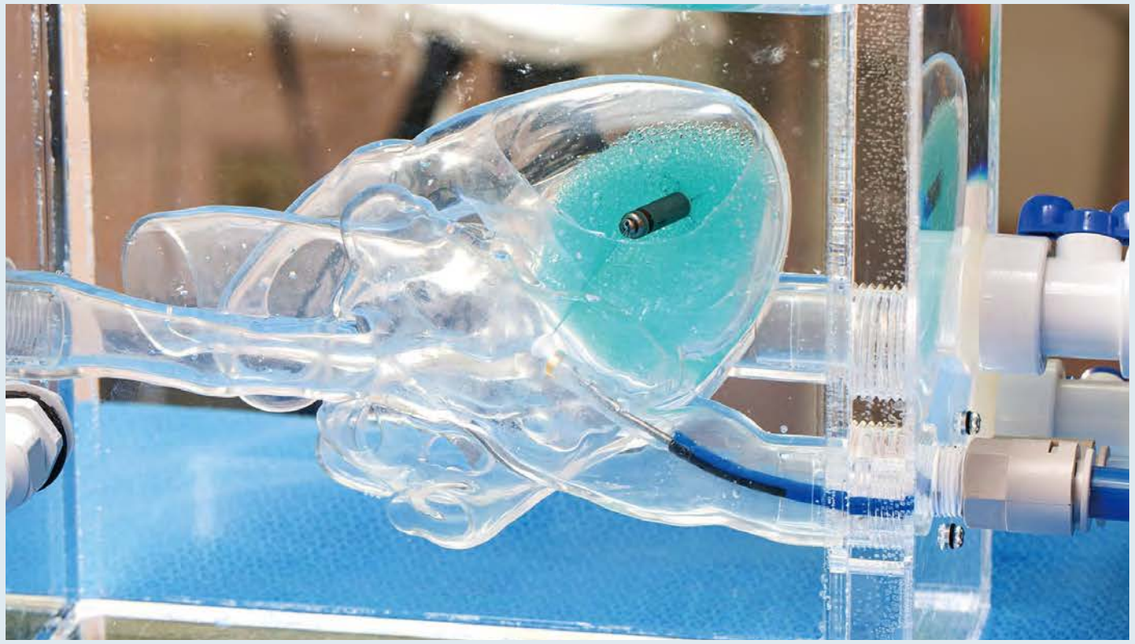
3. HEARTROID Pump Type-3

Compatible with the following heart model

MV, TSP/ASD/PFO, LAA, Leadless PM

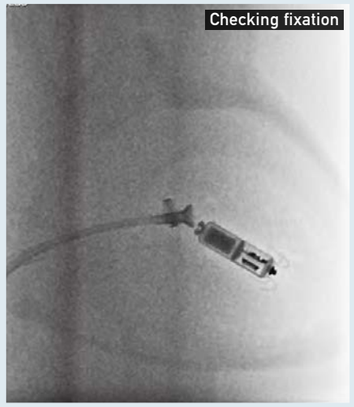
4. Tube with Sheath
   Number of tubes : 1 (27Fr)
5. Lubricant
6. Hose

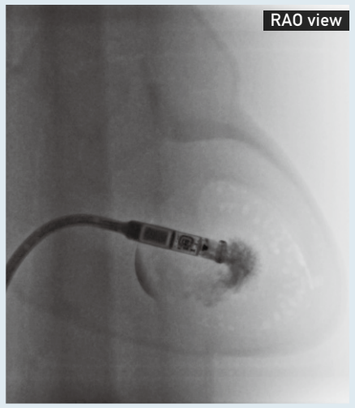
▶ See p.32 in details



HEARTROID Leadless PM model facilitates simulation training of a leadless pacemaker device implantation procedure, with or without X-ray visualization. The operator is able to simulate full procedure; inserting a delivery catheter from femoral vein via right atrium into right ventricle, confirming the position of the device on the right ventricular septum with contrast under X-ray and deployemnt followed by checking fixation process.

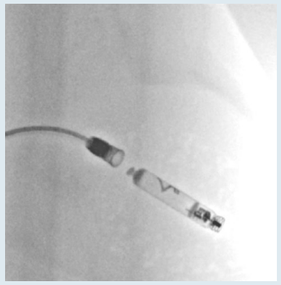
Leadless PM implantation with HEARTROID



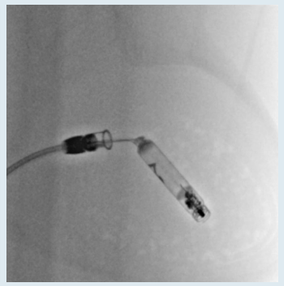


Leadless PM model facilitates both device implantation and retrieval procedure with or without X-ray fluoroscopy. By combining X-ray and camera view, the simulation training will be more efficient by visualizing the behavior of the device in the heart, which is not visible in the real case.

Implantaion procedure



Retrieval procedure



AAA Model

Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for AAA

2. Smart Tank for AAA

3. HEARTROID Pump Type-I

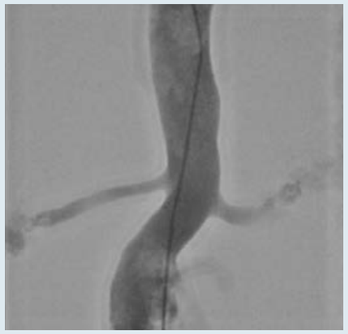
Compatible with the following heart model

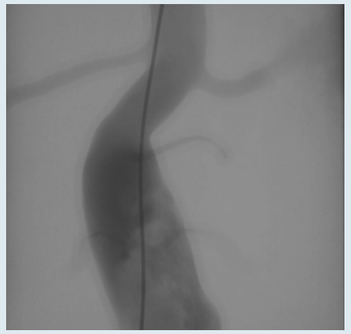
Coronary, TPVI, CSR, EP, CRT, AAA, EVT, RDN, EMB, NV

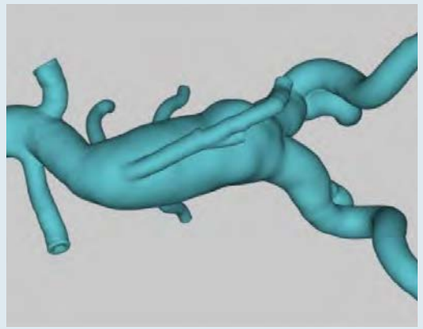
4. Tubes with Sheath
   Number of tubes : 2 (24Fr)
5. Lubricant
6. Hose

▶ See p.32 in details

HEARTROID AAA model is designed for training in Stent graft deployment under X-ray fluoroscopy and camera view. This model can facilitate how to plan where to deploy the device and learn the entire procedure from aortography to safe removal of the delivery catheter through the simulation training. Aortic aneurysm is positioned at infra-renal aorta. Branches include bilateral renal arteries, testicular arteries and inferior mesenteric artery.

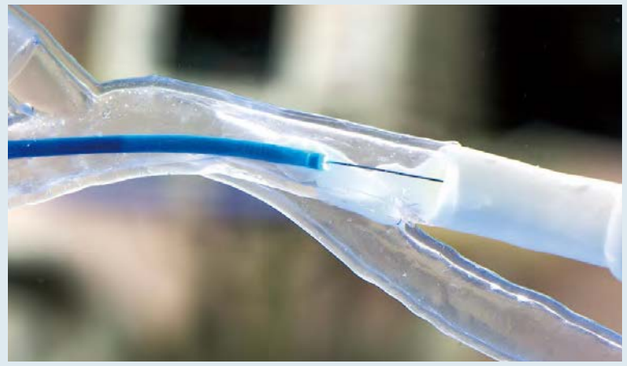






EVT Model

Web



Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for EVT

Peripheral vessel model. Major arteries from terminal aorta to plantar arch with some pockets capable of setting removable lesion parts.

2. Smart Tank for EVT

3. HEARTROID Pump Type-I

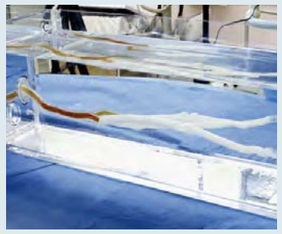
Compatible with the following heart model

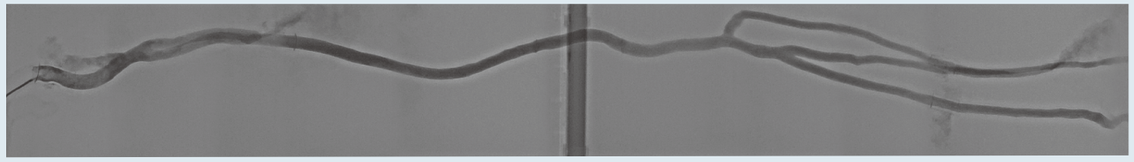
Coronary, TPVI, CSR, EP, CRT, AAA, EVT, RDN, EMB, NV

4. Tubes with Sheath
   Number of tubes : 2 (10Fr)
5. Lubricant
6. Hose

▶ See p.32 in details

HEARTROID EVT model facilitates simulation for peripheral intervention procedures under X-ray fluoroscopy and non-fluoroscopic situation. This vessel model covers from the terminal aorta to the plantar arch, and supports both retrograde and antegrade approaches. Similar to the HEARTROID coronary artery model, this system can incorporate sections of stenosis, total occlusion and severe calcification, thus allowing procedures of various cases such as stent deployment and debulking procedures. The tank can be divided between the above-knee area (AK) and the below-knee area (BK) for easy setup.





RDN Model

Web

HEARTROID RDN model allows trainees to understand how to manipulate catheters during RDN (renal denervation) procedure with or without X-ray fluoroscopy.
With a pulsatile pump included in the set, blood flow from the aorta to the extremity can be simulated and verified by realistic angiographic imaging. We offer steeply angled renal branches, along with further customization depending on usage.

Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for RDN

The model is primarily designed for RDN (renal denervation). Vessel model can be customized depending on the purpose of use, along with the special tank.

2. Smart Tank for RDN

3. HEARTROID Pump Type-I

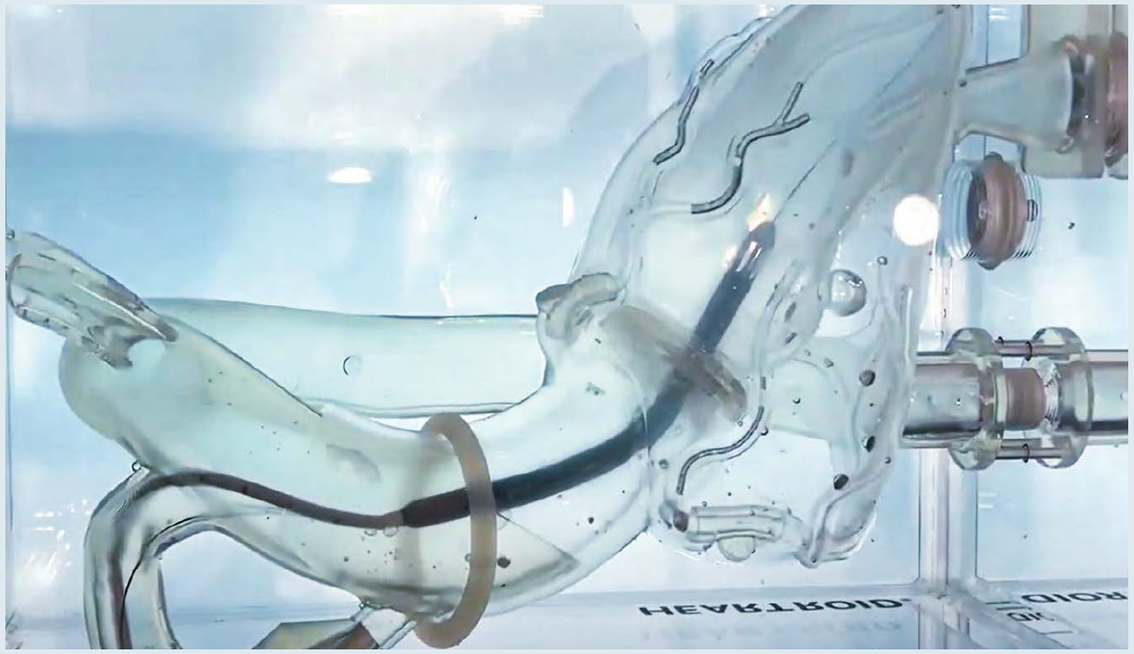
Compatible with the following heart model

Coronary, TPVI, CSR, EP, CRT, AAA, EVT, RDN, EMB, NV

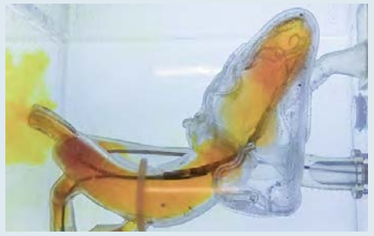
4. Tubes with Sheath
   Number of tubes : 2 (8Fr)
5. Lubricant
6. Hose

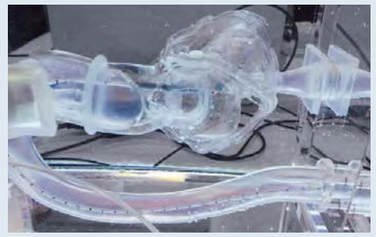
▶ See p.32 in details

Percutaneous VAD Model



HEARTROID Percutaneous VAD (ventricular assist device) model is designed for training under X-ray fluoroscopy and camera view. This model can facilitate how to insert the device from femoral or subclavian artery to the appropriate position.
Left ventricle contracts with the pulsatile pump, so it can visualize the comparative situation with or without the support of percutaneous VAD. It can also facilitate the visualization of the coronary flow with X-ray angiography or the camera along with the dye injection.





Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for Percutaneous VAD

2. Smart Tank for VAD

3. HEARTROID Pump Type-2

Compatible with the following heart model

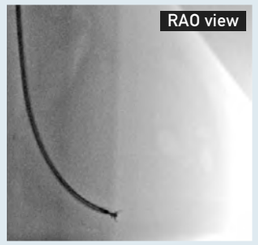
TAVI, TPVI, VAD

4. Tubes with Sheath
   Number of tubes : 2 (24Fr)
5. Lubricant
6. Hose

▶ See p.32 in details

Myocardial Biopsy Model

Web



With this model, the myocardial biopsy procedure can be simulated under X-ray fluoroscopy, similar to the set-up in a real cath lab. The transparent heart model enables one to practice the procedure by confirming the direction of the sheath and forceps through both an X-ray image and a camera image.

Tissue removed from the ventricular septum.

Tissue removed from the ventricular free wall, not the ventricular septum.

As the material used to simulate the ventricular septum is different from that of the ventricular free wall, it is easy to confirm whether the tissue was removed from the appropriate area after the procedure. Using the X-ray image, it is possible to determine if the forceps are facing towards the free wall. The compact camera with a flexible arm can provide a clear image from various angles.

Basic Set

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

1. Model for Myocardial Biopsy

The heart shape is designed based on the Four-Chamber Model. The septal part can be replaced. Please contact JMC for details.

2. Smart Tank for EMB

3. HEARTROID Pump Type-I

Compatible with the following heart model

Coronary, TPVI, CSR, EP, CRT, AAA, EVT, RDN, EMB, NV

4. Tubes with Sheath
   Number of tubes : 2 (10Fr)
5. Lubricant
6. Hose

▶ See p.32 in details

HEARTROID System

"HEARTROID" is a training system with a heart model and a pulsatile pump for interventional cardiologists and medical students. This system offers clear angiographic images under X-ray fluoroscopy in the Cath lab, with a short prep time of only three minutes.

Heart model + Special Tank + Pulsatile Pump

Just pour water and connect with the Pump

How to Set Up

Reading QR cord, you can find the movie "How to set up".

Coronary

TAVI

Basic Set

Heart model

A 3D-printed models to practice coronary, structual, peripheral and ablation procedures. Ability to customize as needed.

Smart Tank

Transparent tank that provides high visibility for catheter use simulation with or without X-ray fluoroscopy. No more than six liters of water are required for training.

Pulsatile Pump

Our uniquely-developed pulsatile pump can be set by 30-120 bpm (1200-4800ml/min in flow volume.). Realistic coronary images are obtained by particular patterns of the cylinder movement.

Sheath

Special tubes with sheath.

Lubricant

Special lubricant for coating the inner surface of the heart model.
1 fl. oz. (lasts for 20 coatings)

Hose

Hose with one-touch joint.

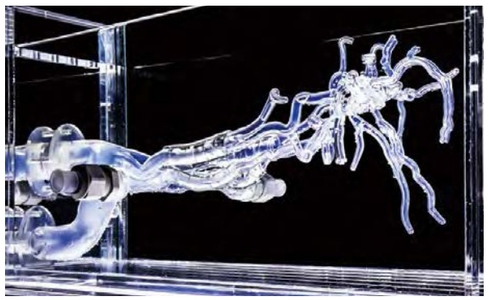
HEARTROID® NV

HEARTROID NV is the first neurovascular model as HEARTROID brand, which has a lot of experience in cardiac catheterization simulators.
This model realistically reproduces the tactile feeling of catheter operation as well as the way it looks under X-ray fluoroscopy by making the most of our technology accumulated to date.
The HEARTROID NV is ideal for physicians seeking to improve their skills through simulation training and for sharing the procedures with brand-new devices.

Webサイト

All-in-one catheterization simulator for neurovascular interventional procedures

By reproducing blood flow with a dedicated pulsating pump, cerebral angiography can be performed as in actual clinical practice. This transparent vascular model created by using a 3D-printing technology allows us to directly observe the behavior of the devices such as embolic coils for cerebral aneurysms and stent retrievers for thrombus retrieval in stroke cases. The system enables effective simulation training by monitoring both direct visual images and X-ray fluoroscopic images, which cannot be realized in actual clinical practices.

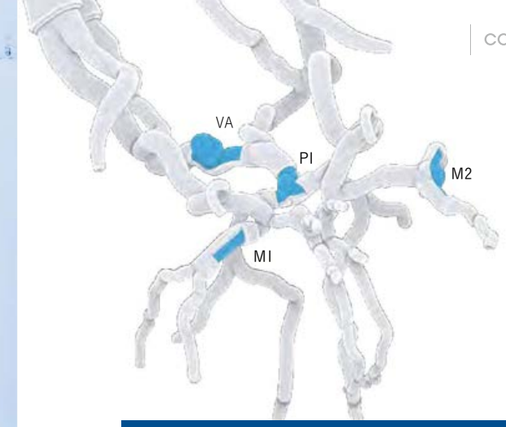


Cerebral angiography can be performed with contrast under X-ray fluoroscopy

Before thrombus retrieval

Successful microcatheter delivery

After thrombus retrieval



Lesion parts can realize various scenarios

NV model platform has a pocket for attaching "lesion parts".
Various scenarios for simulation training can be implemented by replacing the "lesion parts" depending on your purpose.

Recommended procedures

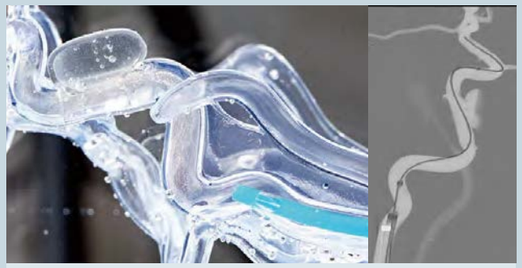
Coil embolization

As in actual clinical practices, cerebral angiography in DSA mode can be performed, and using this image as a reference, the catheter can be delivered to the lesion and an embolic coil can be implanted in the aneurysm. This procedure can be repeated over and over again by replacing the aneurysmal lesion parts.

Thrombectomy

As in actual clinical practice, a series of procedures can be performed from delivery of the stent retriever to thrombus retrieval while performing cerebral angiography. The procedure can be repeated by replacing the disposable thrombus lesion parts.

Flow-diverter deployment



A removable aneurysm (ϕ15 mm) is available for simulation training on the Flow-diverter system, a new treatment method for large cerebral aneurysms. The morphology and the size of aneurysms are customizable.

Basic Set

1. Model for NV

The transparent vessels allow for the catheter procedure simulation by comparing the X-ray-fluoroscopic image with the direct view from the camera.

2. Smart Tank for NV

3. HEARTROID Pump Type-I

4. Tubes with Sheath
Number of tubes : 3 (10Fr)

5. Lubricant

6. Hose

Options and Accessories

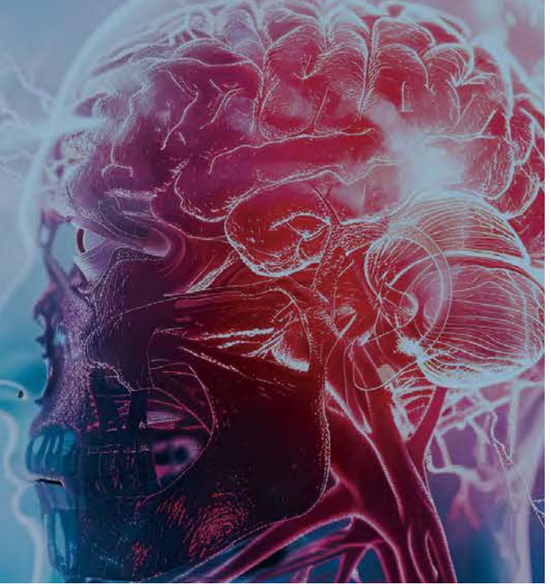
Carrying case customized for HEARTROID NV.

Total Outer Size:
712× 500× 337cm
Capable of containing the basic set and special table.

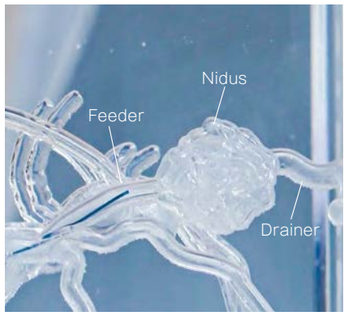
Camera Set

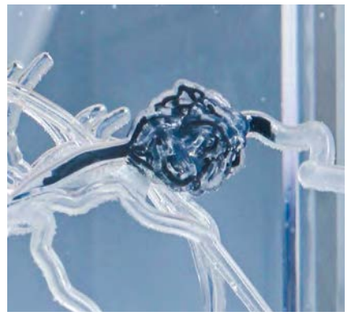
A compact camera with a flexible arm that can provide clear images from various angles.
Simple connection with a camera and monitor can provide a clear image.

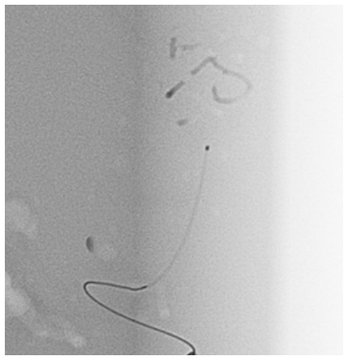
AVM embolization

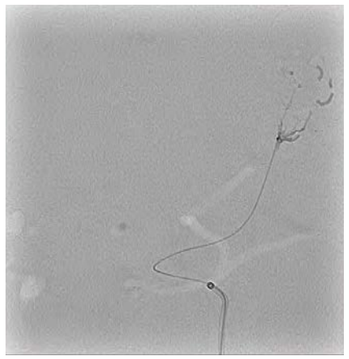


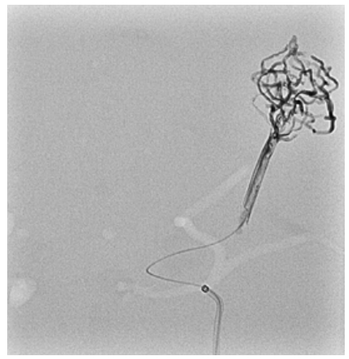
AVM (arteriovenous malformation) embolization can be facilitated under X-ray fluoroscopy and camera view. Embolization procedures with microcatheter including so-called “plug and push technique” can be simulated with real tictile feelings.



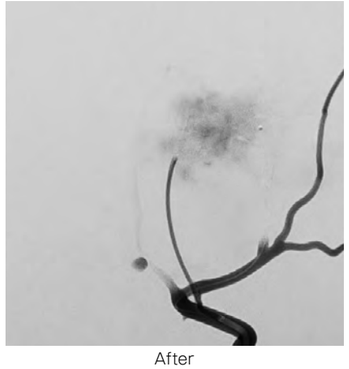




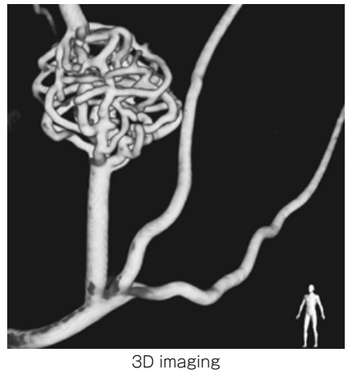




Before



After



3D imaging

CONCEPT

“HEARTROID” is a training system that offers clear angiographic images under X-ray fluoroscopy in the Cath lab, with a short prep time of only three minutes.

Model + Special Tank + Pulsatile Pump

Just pour water and connect with the Pump

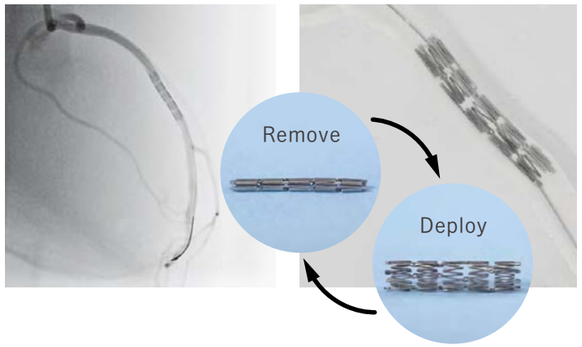
Neurovacular

Cardiovacular

HEARTROID is used
all over the world since 2015

Options and Accessories

Reusable Training Stent



Used in Heart Coronary Model for PCI training. Deployed with a balloon catheter as for a real PCI procedure (not for human use) and easy to remove.

Camera Set

A compact camera with a flexible arm that can provide clear images from various angles.
Via the flexible arm, observation from various angles can be performed. Simple connection with a camera and monitor, a clear image can be attained.

Camera with arm : 15×15×30 (mm)
Special attachment : 280 (mm)
Outer size : 195×150×65 (mm)

Portable Stabilizer

A portable sheath stabilizer easy to store in a small portable case.

ECG Pulse Generator

Pulse generator for synchronisation with CT and other modalities.

Heater System

Heater system to maintain the water temperature in the tank at a constant temperature close to the body temperature.

Pressure Monitoring System

System to display the pressure waveform at the catheter tip in the situation without a polygraph.

Special Carrying Case

Standard Carrying Case (L)

Large carrying case customized for HEARTROID.
Total Outer Size: 730 x 515 x 325mm
Capacity: 96 liters
Capable of containing the basic set and special table.

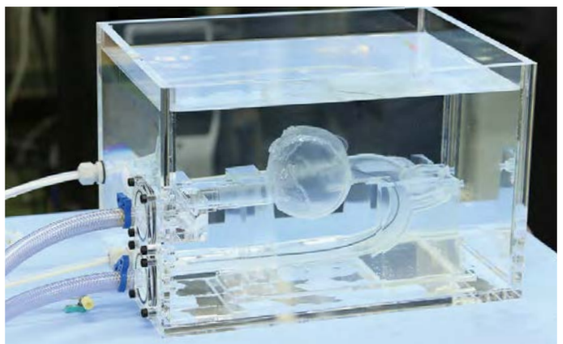
Damage Protection Case (M)

Total Outer Size: 712 x 500 x 337mm
Capable of containing the whole basic set.
BoxCaseTrunk
Capable of containing the basic set.

Damage Protection Case (L)

Total Outer Size: 854 x 540 x 380mm
Capable of containing the whole basic set.
BoxCaseTrunk. Capable of containing the basic set.
Detuchable casters (spare casters include).

HEARTROID for R & D



A high performance pump producing and controlling pulsatile flows and a water tank appropriate for various clinical scenarios and heart models are available. Please contact JMC for price and customization.

Product specifications can be customized and are subject to change without notice. Please contact JMC for details.

Specifications

HEARTROID Model	Coronary					Structure								EP				Peripheral			Heart Failure		NV
	PCI	CTO	CABG	CAG	BIF	TAVI	MV	TPVI	TSP / ASD / PFO	(H)LAA (Hydrogel)		LAA (Silicon)	CSR	(H)EP (Hydrogel)	EP (Silicon)	CRT	Leadless	AAA	EVT	RDN	Percutaneous VAD	EMB	NV
Page	3 - 4	5	6	6	7 - 8	11 - 14	15	16	17 - 18	19		19	20	21 - 23	21 - 23	24	25 - 26	27	28	29	30	31	33 - 34

Basic Set

Pulsatile Pump	Type-1	●			●					●	●	●	●	●	●	●	●	●		●	●	●
	Type-2		●		● ***															●		
	Type-3			●		●	●		●								●					
Smart Tank	—	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
Hose	—	●	●											●				●			●	●
Sheath	—	● 8Fr × 2	● 6Fr, 24Fr	● 26Fr	● 24Fr	● Y-shaped 16Fr × 2	● 24Fr		● 24Fr	● Y-shaped 16Fr × 2r	● Y-shaped 16Fr × 2	● Y-shaped 16Fr × 2	● Y-shaped 16Fr × 2	● 27Fr	● 24Fr × 2	● 10Fr × 2	● 8Fr × 2	● 24Fr × 2	● 10Fr × 2	● 10Fr × 3			
Lubricant	—	●	●	●	●	●			●	●		●	●	●	●	●	●	●	●	●	●	●
Special Parts	—	●	●	●		●				●			●	●	●							
Camera	—	●				●								●				●			●	●
Sheath fixture	—	●				●								●				●			●	●
Carry case *	Standard	●				●								●				●			●	●
	Damage Protection M	●	●	●		●	●		●							●	●					●
	Damage Protection L		● **								●	●										

(H)··· Hydrogel series compatible　　*···Standard or Damage Protection carryig case can be selected　　**···TAVI HZ model　　***··· TPVI typeS needs type2 pump only
TPVI typeB needs both type1 and type2 pump

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FYC FUYO CORPORATION

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GOOD DESIGN

HEARTROID wins “The Good Design Awards 2020”
presented by The Chicago Athenaeum

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