

Penumbra

SMART COIL[®]

Successful Coiling **Simplified**

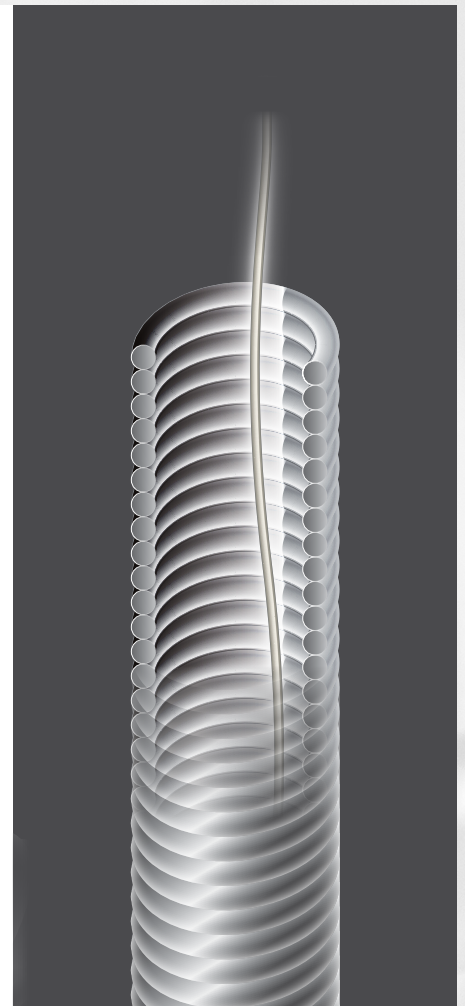
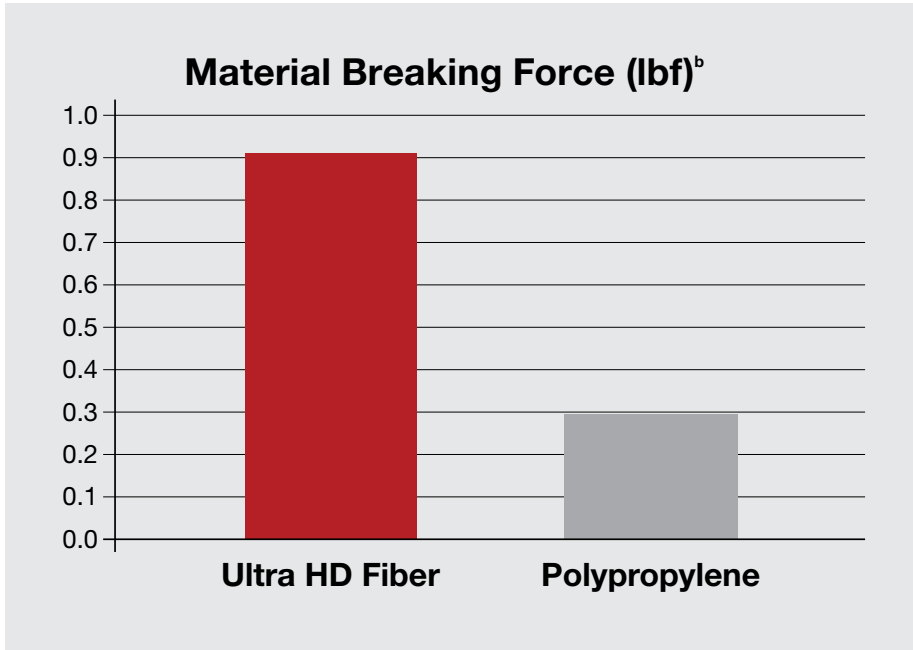
10

10 Microcatheter
Compatible

Penumbra 

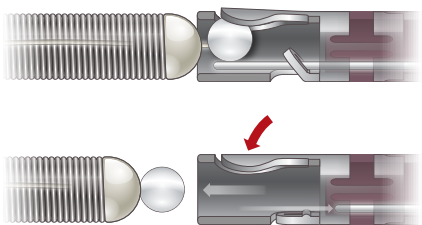
Ultra HD Fiber

The stretch-resistant element in SMART COIL uses material that is **3x stronger and more flexible** than current stretch-resistant materials



Instant Mechanical Detachment

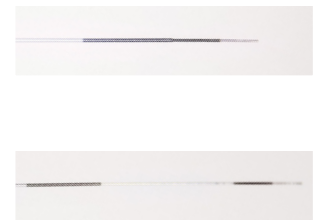
A trigger pull prompts a consistent action inside the handle, designed to ensure a reliable release



Detachment zone



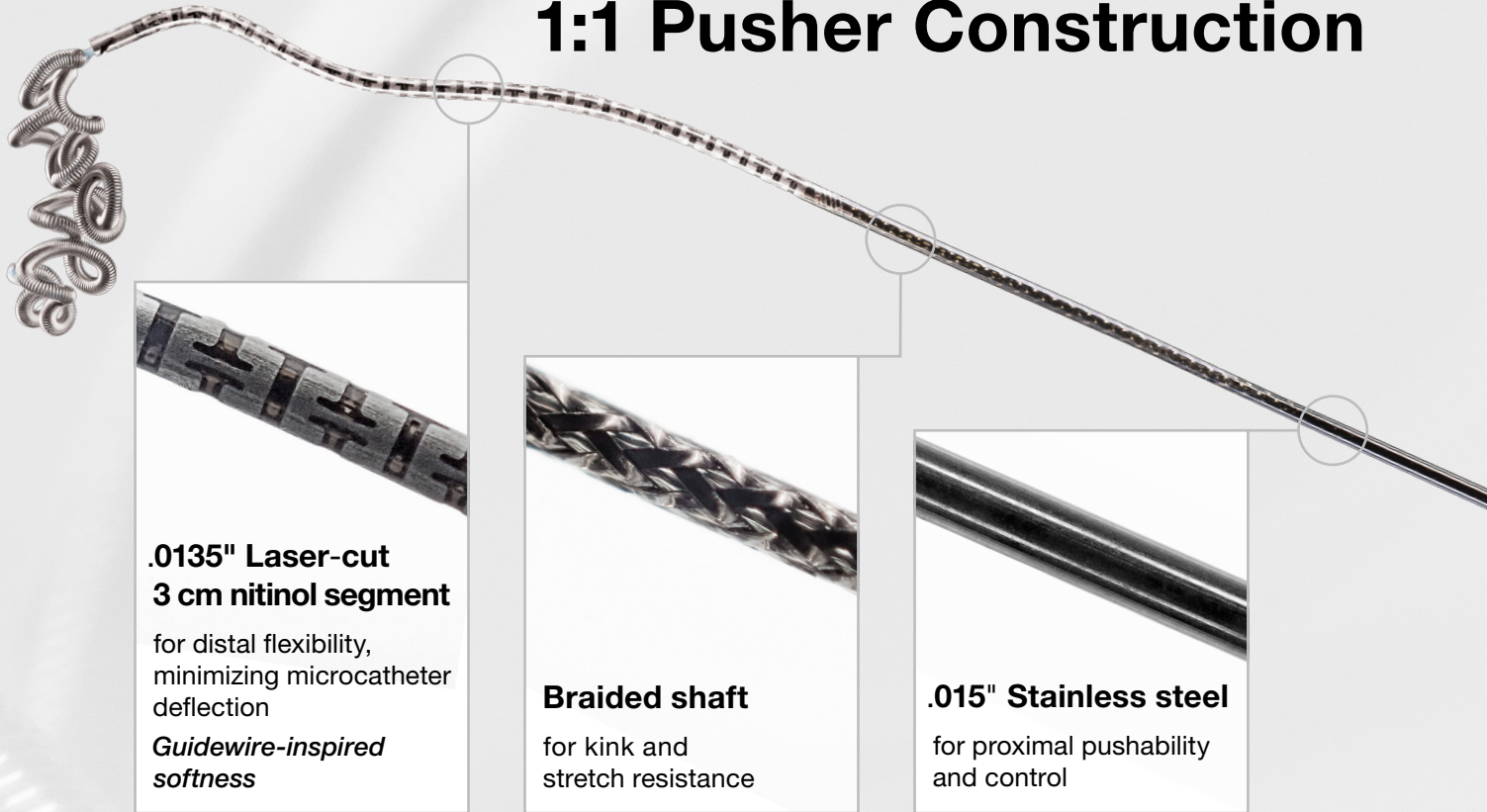
Single-click detachment handle



Visual detachment confirmation

Two points of detachment confirmation: an **audible click** and a **visual separation** of the proximal black marker

1:1 Pusher Construction



**.0135" Laser-cut
3 cm nitinol segment**

for distal flexibility,
minimizing microcatheter
deflection

*Guidewire-inspired
softness*

Braided shaft

for kink and
stretch resistance

.015" Stainless steel

for proximal pushability
and control

Pusher Performance Comparison

SMART COIL **Stryker® Target®**
.015" pusher diameter .0135" pusher diameter^a

Cross Section



.0165"
microcatheter
inner diameter

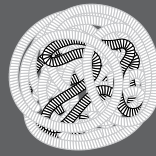
**Behavior in
Microcatheter**



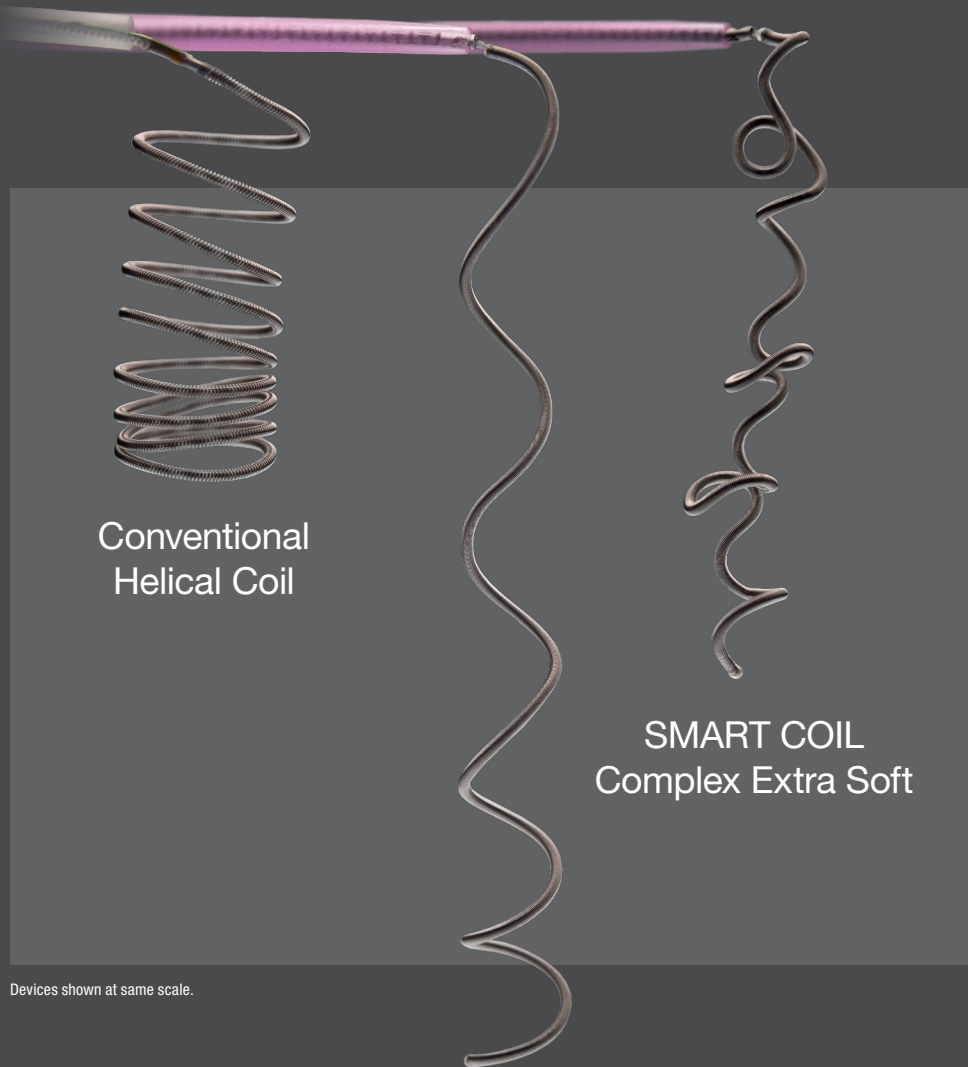
SMART COIL features
a larger diameter
pusher, designed for
**minimal snaking
and maximum feel**

Renderings for illustrative purposes only. Individual results may vary depending on a variety of patient-specific attributes.
a. Data on file at Penumbra, Inc.

WAVE™ Extra Soft



Seeks Space like **Liquid Metal**



Conventional
Helical Coil

SMART COIL
Complex Extra Soft

The **unique shape**, combined with an **Extra Soft profile** allows WAVE to find interstices other coil shapes may not

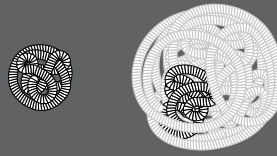
This
may result
in increased
packing density

Devices shown at same scale.

SMART COIL
WAVE Extra Soft

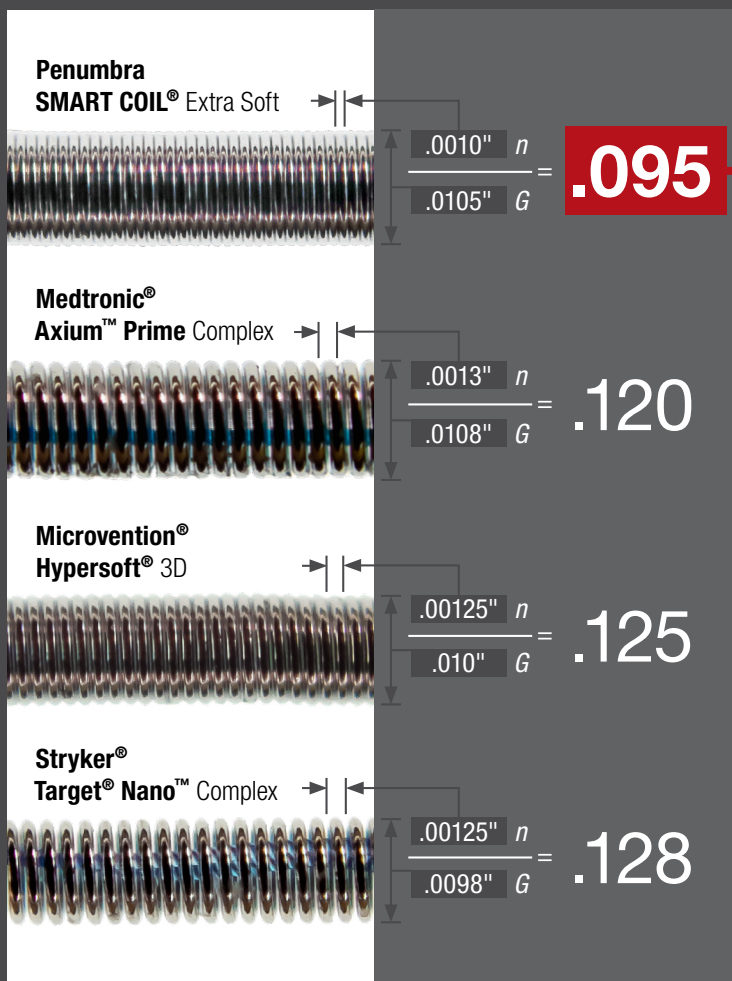
FILL / FINISH

Extra Soft Complex

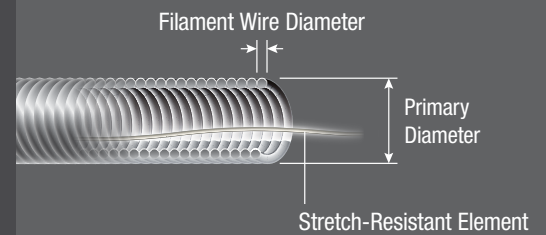


The Softest Coil in its Class^e

Built with **TrueForm Technology**, SMART COIL maintains **consistent shape integrity**, making it the **softest framing coil** for aneurysms below 5 mm^e



**Smaller Value,
Softer Coil**



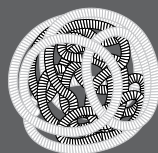
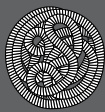
Coil softness is described by a ratio using filament diameter to primary diameter

Devices shown at same scale.
Rendering for illustrative purposes only.

e. Data on file at Penumbra, Inc.

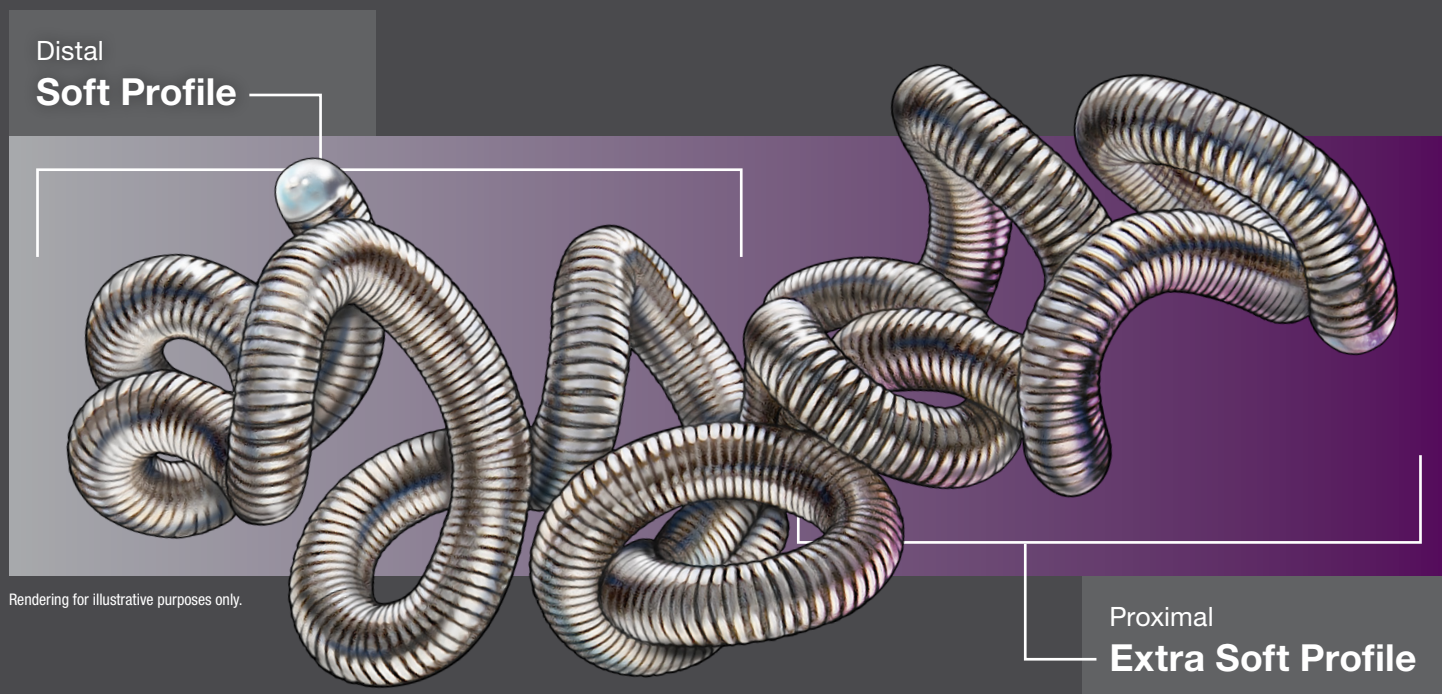
FRAME / FILL

Soft Complex



Hybrid Softness Profile

Engineered to **transition smoothly between softness profiles** during deployment, allowing effective coil distribution

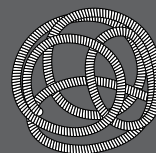


Transitions from Soft to Extra Soft

25 to 50% Extra Soft profile,
depending on coil length

FRAME / FILL

Plus / Standard Complex



Stable, Solid, Secure

Shaped with SMART COIL TrueForm Technology, designed to maximize shape retention and uniform loop distribution for the ideal frame

Framing 12 mm Aneurysm using longest coil available^c

Target[®] XL 360

One 12 mm × 45 cm coil



4.9% Packing Density^d

SMART Plus Standard

One 12 mm × 60 cm coil



6.1% Packing Density^d

Devices shown at same scale.

SMART Plus Standard provides a

**23% volume
advantage^d**

c. Data on file at Penumbra, Inc.

d. Calculated using total volume of aneurysm (904.78 mm³), which provides a cumulative volume of 55.4 mm³ for SMART Plus Standard coil and a cumulative volume of 44.7 mm³ for Target XL 360 Soft coil.

FRAME

Ordering Information

SMART Plus Standard / Standard

Frame



Catalog Number	Secondary Diameter (mm)	Length (cm)
400SMTSTD0408	4	8
400SMTSTD0510	5	10
400SMTSTD0515	5	15
400SMTSTD0615	6	15
400SMTSTD0620	6	20
400SMTSTD0715	7	15
400SMTSTD0725	7	25
400SMTSTD0820	8	20
400SMTSTD0830	8	30
400SMTSTD0920	9	20
400SMTSTD0930	9	30
400SMTSTD1045	10	45
400SMTSTD1160	11	60
400SMTSTD1260	12	60
400SMTSTD1360	13	60
400SMTSTD1460	14	60
400SMTSTD1660	16	60
400SMTSTD1860	18	60

Soft Complex

Frame / Fill



Catalog Number	Secondary Diameter (mm)	Length (cm)
400SMTSFT0203	2	3
400SMTSFT0304	3	4
400SMTSFT0306	3	6
400SMTSFT0308	3	8
400SMTSFT3H08	3.5	8
400SMTSFT0406	4	6
400SMTSFT0408	4	8
400SMTSFT0410	4	10
400SMTSFT4H10	4.5	10
400SMTSFT0506	5	6
400SMTSFT0510	5	10
400SMTSFT0515	5	15
400SMTSFT0610	6	10
400SMTSFT0615	6	15
400SMTSFT0715	7	15
400SMTSFT0820	8	20
400SMTSFT0930	9	30

Extra Soft Complex

Frame / Fill



Catalog Number	Secondary Diameter (mm)	Length (cm)
400SMTXSFT0101	1	1
400SMTXSFT011H	1	1.5
400SMTXSFT0102	1	2
400SMTXSFT0103	1	3
400SMTXSFT0104	1	4
400SMTXSFT1H02	1.5	2
400SMTXSFT1H03	1.5	3
400SMTXSFT1H04	1.5	4
400SMTXSFT0202	2	2
400SMTXSFT0203	2	3
400SMTXSFT0204	2	4
400SMTXSFT0206	2	6
400SMTXSFT0208	2	8
400SMTXSFT2H03	2.5	3
400SMTXSFT2H04	2.5	4
400SMTXSFT2H06	2.5	6
400SMTXSFT2H08	2.5	8
400SMTXSFT3H04	3	4
400SMTXSFT3H06	3	6
400SMTXSFT3H08	3	8
400SMTXSFT3H06	3.5	6
400SMTXSFT3H08	3.5	8
400SMTXSFT0406	4	6
400SMTXSFT0408	4	8
400SMTXSFT0410	4	10
400SMTXSFT4H12	4.5	12

WAVE™ Extra Soft

Fill / Finish



Catalog Number	Secondary Diameter (mm)	Length (cm)
400SMTHXSFT0101	1	1
400SMTHXSFT0102	1	2
400SMTHXSFT0103	1	3
400SMTHXSFT1H01	1.5	1
400SMTHXSFT1H02	1.5	2
400SMTHXSFT1H03	1.5	3
400SMTHXSFT0202	2	2
400SMTHXSFT0203	2	3
400SMTHXSFT0204	2	4
400SMTHXSFT0206	2	6
400SMTHXSFT0208	2	8
400SMTHXSFT2H04	2.5	4
400SMTHXSFT2H06	2.5	6
400SMTHXSFT2H08	2.5	8
400SMTHXSFT0304	3	4
400SMTHXSFT0306	3	6
400SMTHXSFT0308	3	8
400SMTHXSFT0406	4	6
400SMTHXSFT0408	4	8
400SMTHXSFT0410	4	10
400SMTHXSFT0510	5	10

Detachment Handle



Catalog Number	Description
SCH1	SMART COIL Detachment Handle

BENCHMARK™ 071 Kit (6F Access Catheter + 5F Select™)

Catalog Number	Description	BENCHMARK 071 Length (cm)	BENCHMARK 071 Shape	5 F Select Length (cm)	5 F Select Shape
BMK6F95BER120	BENCHMARK 071 Kit	95	Straight	120	BER
BMK6F95MBER120	BENCHMARK 071 Kit	95	MP	120	BER
BMK6F105BER130	BENCHMARK 071 Kit	105	Straight	130	BER
BMK6F105MBER130	BENCHMARK 071 Kit	105	MP	130	BER

Penumbra SMART COIL System — Indication For Use
The Penumbra Smart Coil System is indicated for the embolization of:

- Intracranial aneurysms
- Other neurovascular abnormalities such as arteriovenous malformations and arteriovenous fistulae
- Arterial and venous embolizations in the peripheral vasculature

Contraindications

There are no known contraindications.

Warnings

The Penumbra Smart Coil System should only be used by physicians who have received appropriate training in interventional techniques.

Precautions

- The device is intended for single use only. Do not resterilize or reuse. Resterilization and/or reuse may compromise the structural integrity of the device or increase the risk of contamination or infection leading to device failure and/or cross-infection and potential patient injury, illness, or death.
- Do not use kinked or damaged devices. Do not use opened or damaged packages. Return all damaged devices and packaging to the manufacturer/distributor.
- Standard and Soft configurations of Smart Coils are

designed with Nitinol wire inside the platinum outer coil. The safety and effectiveness of this device has not been evaluated in patients with Nitinol allergy.

- Use prior to the "Use By" date.
- Use device in conjunction with fluoroscopic guidance.
- Do not advance or withdraw the device against resistance without careful assessment of the cause using fluoroscopy.
- Moving or torquing the device against resistance may result in damage to the vessel or device.
- Maintain a constant infusion of an appropriate flush solution.

Potential Adverse Events

Potential complications include but are not limited to: acute occlusion; air embolism; allergic reaction and anaphylaxis from contrast media; aneurysm rupture; arteriovenous fistula; coagulopathy; coil herniation into parent vessel; death; device malfunction; distal embolization; emboli; embolic stroke and other cerebral ischemic events; false aneurysm formation; hematoma or hemorrhage at access site of entry; incomplete aneurysm occlusion; infection; intima dissection; intracranial hemorrhage; ischemia; myocardial infarction; neurological deficits including stroke; parent artery occlusion; peripheral thromboembolic events; post-embolization syndrome; premature device detachment;

recanalization; renal failure; respiratory failure; revascularization; thromboembolic episodes; vessel spasm, thrombosis, dissection or perforation.

BENCHMARK Intracranial Access System — Indication for Use
The BENCHMARK Intracranial Access System is indicated for the introduction of interventional devices into the peripheral, coronary, and neuro vasculature.

Contraindications

There are no known contraindications.

Warnings

The BENCHMARK Intracranial Access System should only be used by physicians who have received appropriate training in interventional techniques.

Precautions

- The device is intended for single use only. Do not resterilize or reuse. Resterilization and/or reuse may result in ineffective catheter coating lubrication, which may result in high friction and the inability to access the target vasculature location; and/or may compromise the structural integrity of the device.
- Do not use kinked or damaged devices. Do not use open or damaged packages. Return all damaged devices and

packaging to the manufacturer/distributor.

- Use prior to the "Use By" date.
- Use the BENCHMARK Intracranial Access System in conjunction with fluoroscopic visualization.
- Do not advance or withdraw the BENCHMARK Intracranial Access System against resistance without careful assessment of the cause using fluoroscopy. If the cause cannot be determined, withdraw the device. Unrestrained moving or torquing the device against resistance may result in damage to the vessel or device.
- Maintain a constant infusion of an appropriate flush solution.
- If flow through the device becomes restricted, do not attempt to clear the lumen by infusion. Remove and replace the device.

Potential Adverse Events

Possible complications include, but are not limited to, the following: acute occlusion; air embolism; death; distal embolization; emboli; false aneurysm formation; hematoma or hemorrhage at puncture site; infection; intracranial hemorrhage; ischemia; neurological deficits including stroke; vessel spasm, thrombosis, dissection, or perforation.

Penumbra

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