

Enseal[®]

Value Analysis Summary

ENSEAL[®] X1 Tissue Sealers



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ETHICON
PART OF THE *Johnson & Johnson* FAMILY OF COMPANIES

Ethicon Energy Solutions. Healing first.

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Why Ethicon energy? Healing first.

At Ethicon we understand that surgeons, nurses, and administrators are aiming to deliver...



Surgical burdens increase complications which can **increase cost by up to five times**¹

**POSITIVE SURGICAL
OUTCOMES**

while...

**IMPROVING EFFICIENCY,
OR SAFETY, AND REDUCING
COSTS.**

Our focus for Ethicon Energy Solutions is on addressing surgical burdens including:

- ✓ Bleeding
- ✓ Length and cost of operative time

How we deliver value

Ethicon energy solutions

That's why Ethicon energy is dedicated to delivering energy solutions for surgeons to help patients heal faster and help protect the OR team from surgical risks.

Less invasive energy



Optimize energy delivery to do less tissue damage,¹ advance outcomes,² so that surgeries go according to plan.

Right energy product for the right job



Deliver the most comprehensive product portfolio so surgeons have the right tools for the right energy job in a particular procedure.³

Enhance OR safety and efficiency



Work with OR staff to provide training and education they need for optimal product use and help improve OR safety and efficiency.

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ENSEAL® X1 Tissue Sealers

The ENSEAL[®] X1 Tissue Sealer portfolio

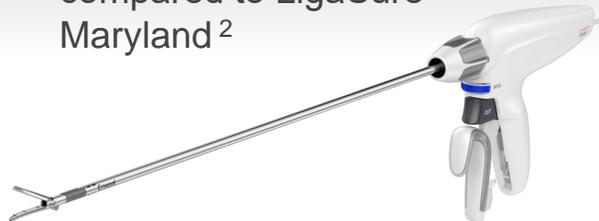
Executive overview

Advanced bipolar devices intended for use during open or laparoscopic procedures.¹

More efficient

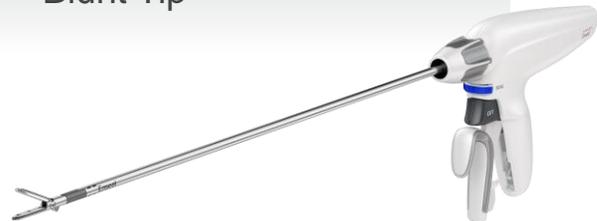
ENSEAL[®] X1 Curved Jaw

Capture more tissue per bite with a longer jaw and wider jaw aperture compared to LigaSure[™] Maryland²



ENSEAL[®] X1 Straight Jaw

Capture more tissue per bite with a longer jaw compared to LigaSure[™] Blunt Tip³



More secure sealing

ENSEAL[®] X1 Large Jaw

Better sealing with less bleeding at the distal tip compared to LigaSure Impact[™]⁴

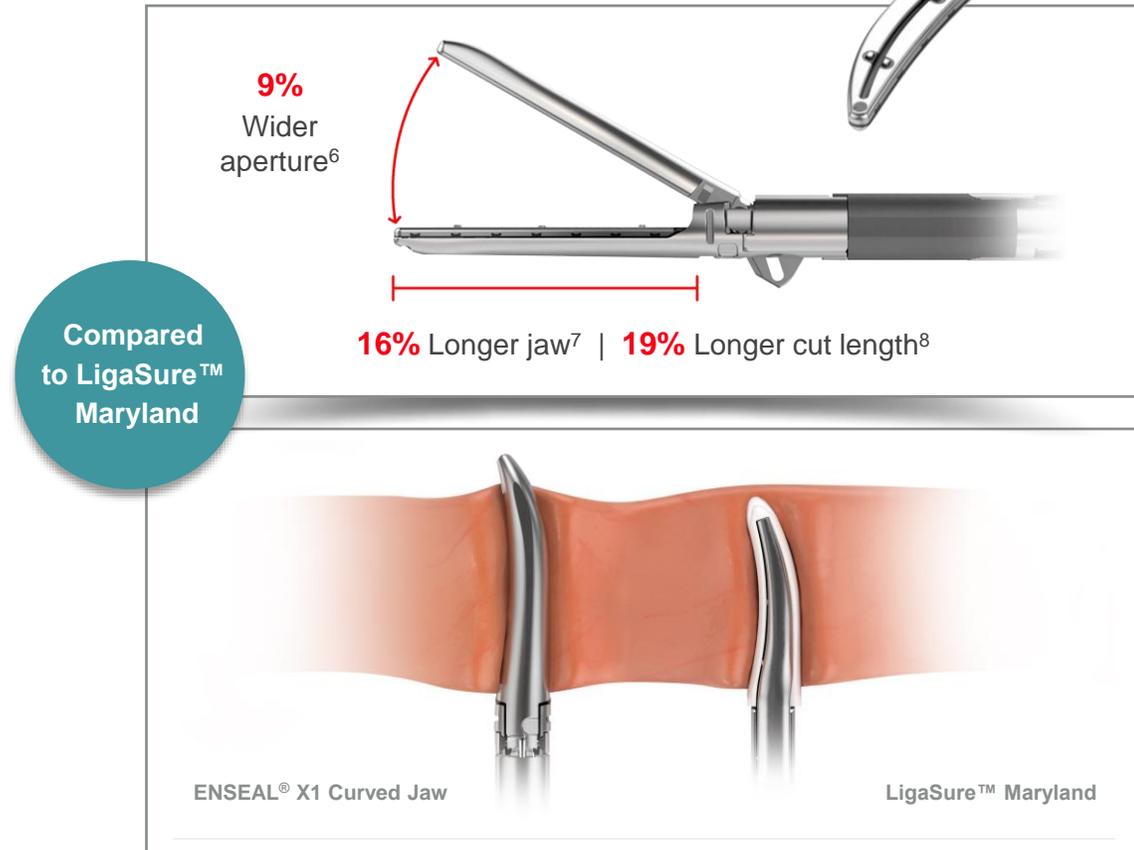


ENSEAL[®] X1 Curved Jaw Tissue Sealer

Product overview

More efficient than LigaSure[™] Maryland¹

- Can **capture more tissue** per bite with a longer jaw and wider jaw aperture²
- Has a **curved, tapered tip** designed for fine dissection³
- More **secure grasping** with 32% stronger distal tip grasping compared to LigaSure Maryland⁴
- **360° continuous shaft rotation** to enable **easy access** to targeted tissue⁵



1. ENSEAL X1 Curved Jaw Tissue Sealer can capture, seal and transect a longer length of tissue per single activation due to a 16% (or 3.4mm) longer jaw ($p < 0.001$) compared to LigaSure[™] Maryland (LF1937). (145163-200630). 2. Based on metrology data, ENSEAL[®] X1 Curved Jaw Tissue Sealer has a 16% (or 3.4mm) longer jaw than LigaSure[™] Maryland (LF1937) ($p < 0.001$) and ENSEAL[®] X1 Curved Jaw Tissue Sealer has a 9% (or 1.15mm) wider jaw aperture than LigaSure[™] Maryland (LF1937) ($p < 0.001$). (145041-200629). 3. (095323-210624). 4. Grasping force measured as the maximum amount of force required to pull porcine jejunum from the distal tip of device jaws. Comparison of ENSEAL[®] X1 Curved Jaw to LigaSure[™] Maryland (LF1937) ($p < 0.001$). (145160-200630). 5. (093778-210601). 6. Based on metrology data, ENSEAL[®] X1 Curved Jaw Tissue Sealer has a 16% (or 3.4mm) longer jaw than LigaSure[™] Maryland (LF1937) ($p < 0.001$) and ENSEAL[®] X1 Curved Jaw Tissue Sealer has a 9% (or 1.15mm) wider jaw aperture than LigaSure[™] Maryland (LF1937) ($p < 0.001$). (145041-200629). 7. Metrology report comparing ENSEAL[®] X1 Curved Jaw to LigaSure[™] Maryland (LF1937) ($p < 0.001$) (093771-180619) (093769-210528).

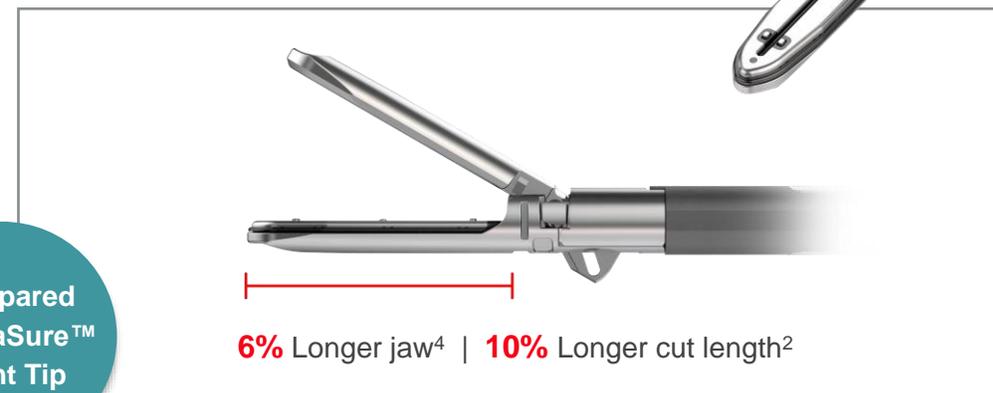
ENSEAL® X1 Straight Jaw Tissue Sealer

Product overview

More efficient than LigaSure™ Blunt Tip¹

- Can **capture more tissue** per bite with a longer jaw¹
- **Transect more tissue** at a time with a 10% longer cut length²
- **360° continuous shaft rotation** to enable **easy access** to targeted tissue³

Compared
to LigaSure™
Blunt Tip



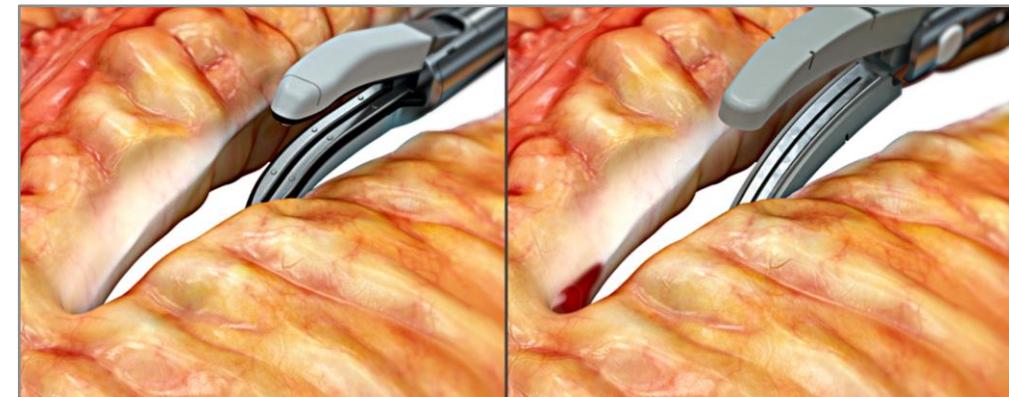
1. Based on metrology data, ENSEAL® X1 Straight Jaw Tissue Sealer has a 6% (or 1.1mm) longer jaw than LigaSure™ Blunt Tip (LF1837) (p < 0.001). (093775-210608). 2. Metrology report comparing ENSEAL® X1 Straight Jaw to LigaSure™ Blunt Tip (LF1837) (p < 0.001). (093768-210608). 3. (093778-210601). 4. Metrology report comparing ENSEAL® X1 Straight Jaw to LigaSure™ Blunt Tip (LF1837) (p < 0.001) (093770-210608).

ENSEAL® X1 Large Jaw Tissue Sealer

Product overview

More secure sealing than LigaSure Impact™¹

- Enabled **better sealing with 59% less bleeding** at the distal tip¹
- Had **41% less lateral thermal spread**²
- Has a **better design** with convenient controls and 360° rotation³



Explore the devices yourself

Experience in augmented reality (AR)

ENSEAL® X1 Curved Jaw
Tissue Sealer



ENSEAL® X1 Straight Jaw
Tissue Sealer



ENSEAL® X1 Large Jaw
Tissue Sealer



Scan the QR codes below with your iOS 14 iPhone or iPad camera to visit the website.
Then tap the AR icon for the experience.

Enseal®

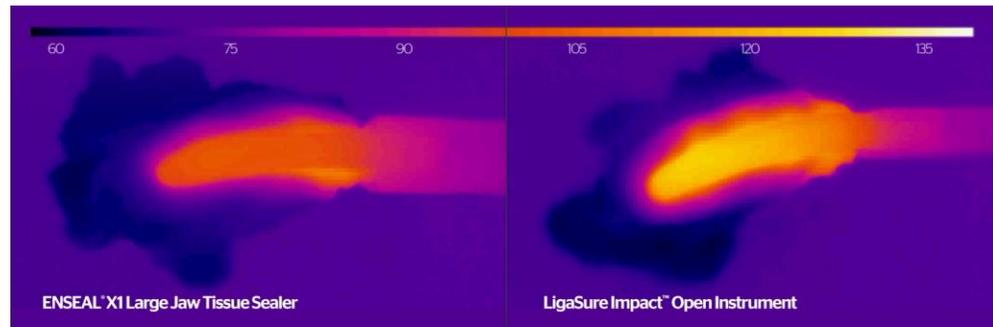
Performance and study data

Effective tissue management

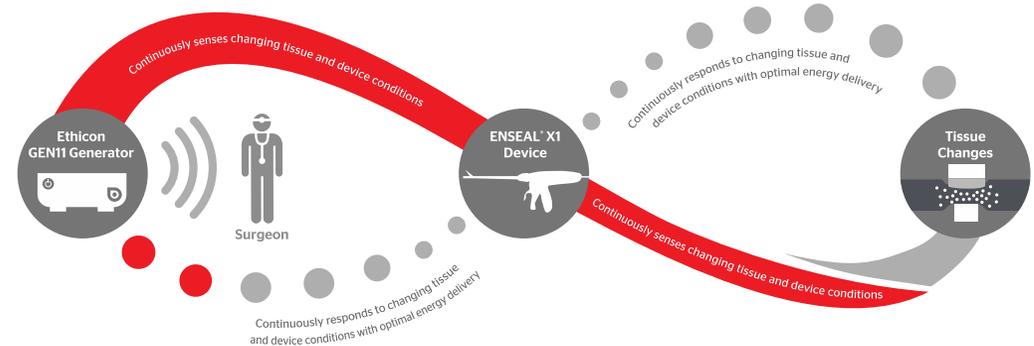
ENSEAL® X1 Tissue Sealers produce minimal lateral thermal spread^{1,2}

ENSEAL® X1 Large Jaw had **41% less thermal spread** compared to LigaSure Impact™³

Thermal jaw imaging comparison⁴



The Intelligence of Adaptive Tissue Technology



Adaptive Tissue Technology, powered by the Ethicon GEN11 Generator, uses an advanced algorithm for intelligent and efficient energy delivery. In ENSEAL® X1 devices, it continuously:

- **Senses** changes in tissue and device conditions
- **Responds** with the optimized amount of energy
- **Delivers** precision and efficiency⁵

Stronger sealing capabilities

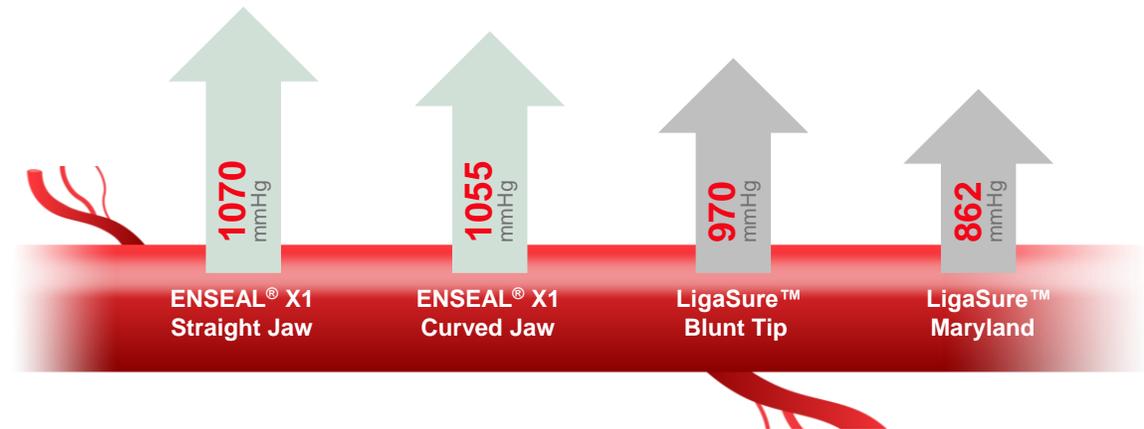
Vessels sealed with ENSEAL® X1 Curved Jaw or ENSEAL® X1 Straight Jaw had higher average burst pressures than vessels sealed with LigaSure™ Maryland^{1,2}

Secure sealing¹:

- Seal vessels up to and including **7mm and lymphatics**³
- Average burst pressures of **more than 8x** normal systolic blood pressure^{4,5}
- Compared to LigaSure™ Maryland:
 - ENSEAL® X1 Curved Jaw had **22% higher** average burst pressures¹
 - ENSEAL® X1 Straight Jaw had **24% higher** average burst pressures²

Burst pressure comparison¹

Average minimum burst pressures



Reliable sealing¹

Preclinical testing results



	ENSEAL® X1 Curved Jaw	ENSEAL® X1 Straight Jaw
Reliable sealing:		
Achieved hemostasis on the first pass (% of seals) ^{1,2}	100% (112/112)	100% (105/105)
Maintained hemostasis during an elevated blood pressure challenge (% of seals) ^{1,3}	100% (112/112)	99% (104/105)
Durable sealing:		
Remained hemostatic through 30-day post-operative time frame (% of seals) ^{4,5}	100% (60/60)	100% (62/62)

Testing included **multiple vessel types and sizes** to account for variation seen across surgical procedures

Examples of types of vessels and tissues tested

Gastroepiploic Artery and Vein	Renal Artery and Vein
Gastroepiploic Pedicle	Carotid Arteries (3-7mm)
Pancreatic-Duodenal Pedicle	Pulmonary Vessels
Short Gastric Pedicle	Uterine Artery and Vein
Splenic Artery and Vein	Omentum
Inferior Mesenteric Artery	Thyrocervical Arteries
Ovarian Pedicle	Mesometrium

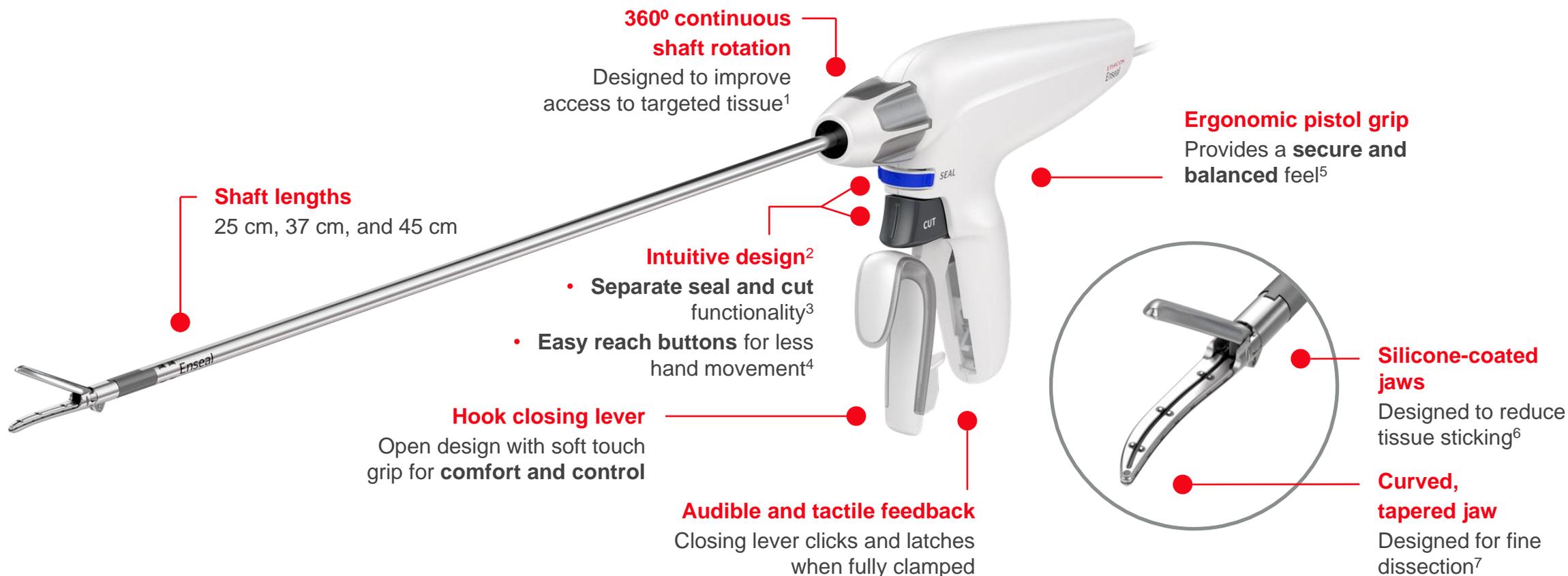
1. 112 of 112 vessels sealed successfully on first pass in an acute porcine model. All seals maintained hemostasis during blood pressure challenge. During blood pressure challenge, systolic blood pressure was increased to at least 200 mmHg for a minimum of 10 minutes to simulate a hypertensive crisis. (095317-200519). 2. 105 of 105 vessels sealed successfully on first pass in a acute porcine model. (140887-200520). 3. In an acute porcine model, 104 of 105 vessels sealed maintained hemostasis during blood pressure challenge. During blood pressure challenge, systolic blood pressure was increased to at least 200 mmHg for a minimum of 10 minutes to simulate a hypertensive crisis. (140890-200520). 4. Based on evaluation of seal durability after 30 (± 2) day survival period and simulated hypertensive crisis in a preclinical chronic porcine model. (n=60 seals). (143327-200612). 5. Based on evaluation of seal durability after 30 (± 2) day survival period and simulated hypertensive crisis in a preclinical chronic porcine model. (n=62 seals). (143334-200612).

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Device comparison

Common user experience across the portfolio

ENSEAL® X1 Curved Jaw Tissue Sealer device features



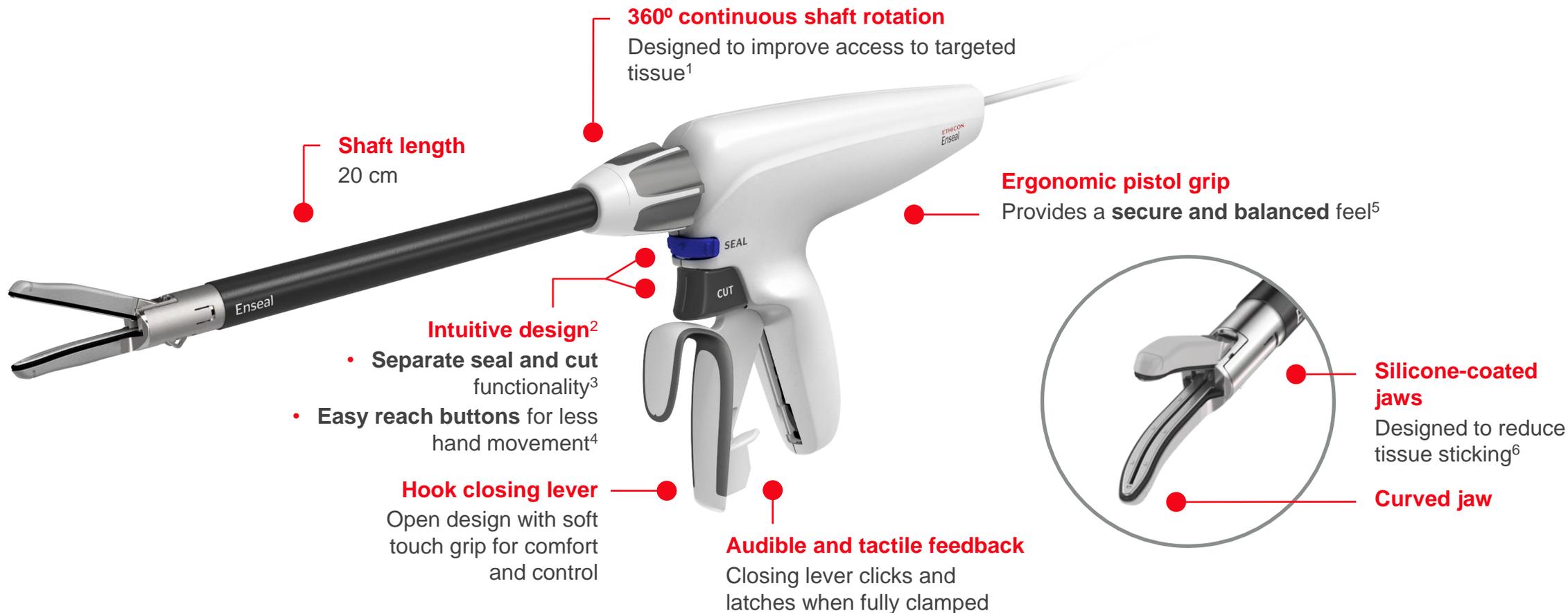
Common user experience across the portfolio

ENSEAL® X1 Straight Jaw Tissue Sealer device features



Common user experience across the portfolio

ENSEAL® X1 Large Jaw Tissue Sealer device features



Surgeon feedback

ENSEAL® X1 5mm devices

Among surgeons using ENSEAL® X1 5mm devices in product concept testing:¹

- **71%** indicated ENSEAL® X1 will make related **surgical tasks easier**
- **67%** thought ENSEAL® X1 will lead to **more efficient** surgeries
- **65%** felt ENSEAL® X1 is a **significant improvement over current devices or techniques** for the same task

A photograph of three surgeons in an operating room, wearing blue scrubs, masks, and hairnets. They are focused on a surgical procedure. The lighting is bright, highlighting the sterile environment.

“Sealing was faster than expected, and there was very minimal thermal spread.”¹

“It feels lighter and is more versatile, and the curved device allows better blunt dissection.”¹

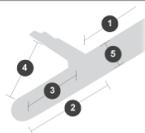
Advanced bipolar devices

Quick comparison

Curved jaw devices¹

Straight jaw devices¹

Large jaw devices²

	ENSEAL® X1 Curved Jaw	LigaSure™ Maryland	Thunderbeat	ENSEAL® G2 Articulating	ENSEAL® G2 Curved	ENSEAL® TRIO
						
1 Shaft Length (cm)	25, 37, 45	23, 37, 44	20, 35, 45	35, 45	14, 25, 35, 45	14, 25, 35, 45
2 Jaw Length (mm)	24.0	20.6	17.4	19.2	19.2	19.2
3 Cut Length (mm)	21.8	18.2	17.4	16.2	16.2	15.0
4 Jaw Aperture (mm)	13.4	12.2	14.5	13.6	13.6	12.2
5 Total Articulation Span	N/A	N/A	N/A	110°	N/A	N/A

	ENSEAL® X1 Straight Jaw	LigaSure™ Blunt Tip	ENSEAL® G2 Straight	ENSEAL® G1 Round Tip
				
1 Shaft Length (cm)	25, 37	23, 37, 44	14, 25, 35, 45	14, 25, 35, 45
2 Jaw Length (mm)	20.4	19.3	19.8	19.8
3 Cut Length (mm)	18.0	16.3	15.8	15.7
4 Jaw Aperture (mm)	13.6	13.1	11.9	12.0
5 Total Articulation Span	N/A	N/A	N/A	N/A

	ENSEAL® X1 Large Jaw	LigaSure™ Impact™
		
1 Shaft Length (cm)	20	18
2 Jaw Length (mm)	38	36
3 Cut Length (mm)	33.5	34
4 Jaw Aperture (mm)	N/A	N/A
5 Total Articulation Span	N/A	N/A

Alternatives to existing surgical devices

Product codes

ENSEAL® X1 Tissue Sealers are compatible with the Ethicon GEN11 Generator and can replace other products on the shelf or provide useful alternatives to existing Ethicon advanced bipolar devices.

DEVICE	PRODUCT CODES	SHAFT LENGTH (CM)	SHAFT DIAMETER (MM)	ENSEAL® X1 PRODUCT CODES
LigaSure™ Maryland	LF1923	23	5	NSLX125C
	LF1937	37	5	NSLX137C
	LF1944	44	5	NSLX145C
LigaSure™ Blunt Tip	LF1823	23	5	NSLX125S
	LF1837	37	5	NSLX137S
	LF1844	44	5	NSLX145C
LigaSure Advance™	LF5544	44	5	NSLX145C
LigaSure Atlas™	LS1037	37	10	NSLX137C
LigaSure™ Dolphin Tip	LS1520	20	5	NSLX125C
	LS1500	37	5	NSLX137C
LigaSure Impact™	LF4418	18	13.5	NSLX120L
THUNDERBEAT®	TB-0520FC	20	5	NSLX125C
	TB-0535FC	35	5	NSLX137C
	TB-0545FC	45	5	NSLX145C
ENSEAL® G2 Curved	NSLG2C25	25	5	NSLX125C
	NSLG2C35	35	5	NSLX137C
	NSLG2C45	45	5	NSLX145C
ENSEAL® G2 Straight	NSLG2S25	25	5	NSLX125S
	NSLG2S35	35	5	NSLX137S
	NSLG2S45	45	5	NSLX145C
ENSEAL® Trio	ETRIO325H	25	5	NSLX125C
	ETRIO335H	35	5	NSLX137C
	ETRIO345H	45	5	NSLX145C
ENSEAL® Round Tip	NSEAL525RH	25	5	NSLX125S
	NSEAL535RH	35	5	NSLX137S
	NSEAL545RH	45	5	NSLX145C

Indications

ENSEAL® X1 Curved and Straight Jaw Tissue Sealers

The ENSEAL® X1 Tissue Sealers are bipolar electro-surgical instruments for use with an electro-surgical generator. They are intended for use during open or laparoscopic surgical procedures to cut and seal vessels, and to cut, grasp and dissect tissue during surgery.

Indications for use include open and laparoscopic general, gynecological, urologic, thoracic, and ENT surgical procedures or any procedure where vessel ligation (cutting and sealing), tissue grasping, dissection, and division of vessels, lymphatics, and tissue bundles is performed (e.g. bowel resections, hysterectomies, gall bladder procedures, Nissen Fundoplication, adhesiolysis, and oophorectomies). The devices can be used on vessels up to and including 7 mm and bundles as large as will fit in the jaws of the instruments.

The ENSEAL® X1 Tissue Sealers have not been shown to be effective for tubal sterilization or tubal coagulation for sterilization procedures. Do not use this system for these procedures.



Indications

ENSEAL® X1 Large Jaw Tissue Sealers

The ENSEAL® X1 Large Jaw Tissue Sealer instrument is a dedicated bipolar electro-surgical instrument intended for use in open surgical procedures where ligation and division of vessels is desired. It is a bipolar instrument for use with the Ethicon Generator G11 (GEN11). It is intended for use during open surgery to cut and seal vessels, cut, grasp, and dissect tissue during surgery. Indications for use include open general, gynecologic, urologic, thoracic, and vascular procedures. These procedures include hysterectomies, colectomies, Nissen fundoplication, adhesiolysis, oophorectomies, etc. The devices can be used on vessels (arteries, veins, pulmonary vasculature, lymphatics) up to and including 7 mm and tissue bundles.

The ENSEAL® X1 Large Jaw Tissue Sealer instrument has not been shown to be effective for tubal sterilization or tubal coagulation for sterilization procedures. Do not use this system for these procedures.



Enseal[®]

How to order

Ordering information

All ENSEAL® X1 purchase orders are made to Johnson & Johnson Healthcare Care Systems, Inc. (JJHCS)

Electronic ordering options

Note: Placing order electronically avoids minimum order fees for hospitals.

- Johnson & Johnson Gateway
Visit jnjgateway.com or call **1-866-JNJ-GATE**
- Global Healthcare Exchange
Visit ghx.com or call **1-866-YOUR-GHX**
- Electronic Data Interchange
Call JJHCS Help Line: **1-800-262-2888**

Non-electronic/manual ordering options

Call JJHCS at **1-800-255-2500** (option 1) between 8:30 am and 8:00 pm Eastern time or fax your order to **1-732-562-2212**.

Customer support

For more information or product support, call **1-877-ETHICON** or visit Ethicon.com/ensealx1lap. See **Instructions for Use** for complete product details.

DEVICE	PRODUCT CODES	QTY / SALES UNIT	SHAFT LENGTH (CM)	SHAFT DIAMETER (MM)
ENSEAL® X1 Curved Jaw	NSLX125C	3	25	5
ENSEAL® X1 Curved Jaw	NSLX137C	3	37	5
ENSEAL® X1 Curved Jaw	NSLX145C	3	45	5
ENSEAL® X1 Straight Jaw	NSLX125S	3	25	5
ENSEAL® X1 Straight Jaw	NSLX137S	3	37	5
ENSEAL® X1 Large Jaw	NSLX120L	6	20	13