



The Right Thread for Every Suture

Get to Know B. Braun Sutures

Specialist Information

Pharmacopoeia

Strength Classification for Surgical Suture Material

USP	METRIC	Thread diameter (mm)
12-0	0.01	0.001-0.009
11-0	0.1	0.010-0.019
10-0	0.2	0.020-0.029
9-0	0.3	0.030-0.039
8-0	0.4	0.040-0.049
7-0	0.5	0.050-0.069
6-0	0.7	0.070-0.099
5-0	1	0.100-0.149
4-0	1.5	0.150-0.199
3-0	2	0.200-0.249
2-0	2.5	0.250-0.299
2-0	3	0.300-0.349
1-0	3.5	0.350-0.399
1	4	0.400-0.499
2	5	0.500-0.599
3	6	0.600-0.699
5	7	0.700-0.799

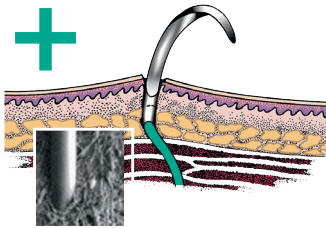
USP – United States Pharmacopoeia

In the United States Pharmacopoeia, classifications are randomly made and are not directly related to the thread diameter.

METRIC – European Pharmacopoeia

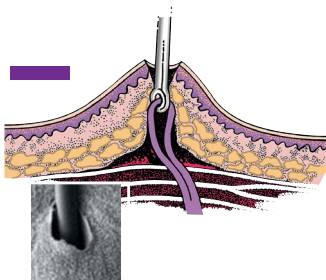
In the European Pharmacopoeia strength specifications, the filament diameters are given in 1/10 mm. Thus, a 1 metric thread is 0.1 mm thick. The description allows precise conclusions to be drawn about the filament diameter.

The USP thickness specifications that were historically developed have become established on the global market. For this reason, the USP value is highlighted in the packaging marking. However, the metric value is still indicated.



Atraumatic Needle-thread Combinations

- Minimal wound trauma
- Secure union of needle and thread
- Smooth transition between needle and thread
- Always new, sterile and sharp needles
- No time consuming threading
- Needle and thread diameter determined according to the indication



Spring Eye Needles – Traumatic

- Wound trauma through doubling of the thread
- Damage to the thread caused by catching in the spring eye
- No secure fit of the thread in the needle eye
- Time consuming threading of the thread in the normal eye

Specialist Information

Knot Types and Techniques

Knot Types

Correct



Square Knot, Weaver's Knot

- Secure closure
- Good for ligatures

Incorrect



The Granny Knot

- Unreliable
- Tends to loosen

Correct



Surgical Knot

- Good tension
- Not for ligatures







Correct



Sliding Knot

- Good for deep lying knots
 - Good for ligatures
-

Knot Technique

Correct		Incorrect	
1 = 1		1 x 1	
1 = 1 = 1		1 x 1 x 1	
2 = 1		2 x 1	

1 = 1 throws are in the opposite direction (sailer's knot = weaver's knot)

1 x 1 throws are not in the opposite direction (known as a woman's knot)

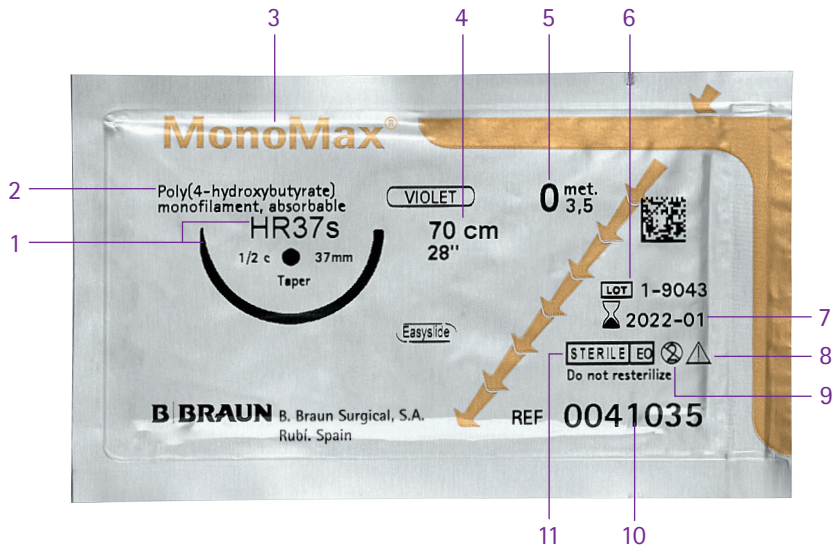
Tips for the Right Knot

- The knot should not be placed directly on the wound edge, but parallel to it in order to avoid wound irritation.
 - Unnecessary friction and manipulation of the suture material should be avoided (risk of thread breakage).
 - The choice of knot depends on the suture material and indication.
 - Knots and ligatures should be tensioned to ensure the necessary strength and help to prevent subsequent slipping.
 - Ligatures require complete occlusion of vessels, while a sutured wound tissue strangulation should be avoided to prevent ischemia and necrosis.
 - Suture thickness, number of knots, and length of endings determine the size of the knots and thus the irritation of the tissue. The selection of the correct thread thickness and the number of knots should therefore be suitable for the indication.
- The ends should be shortened to 3 mm for synthetic material.

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Suture Material Packaging

Labelling of the Packaging and Film



1	Needle description and illustration
2	Description of thread/material
3	Product name
4	Thread length
5	Thread diameter
6	Batch number
7	Use by: Year and month
8	Observe the instructions for use
9	Do not re-sterilise, single-use product
10	Article number
11	Sterilisation method

Explanation of Symbols

For single use only	
Use by: Year and month	
Sterilisation by ethylene oxide (EO)	
Sterilisation by gamma irradiation (R)	
CE mark and identification number of the notified body. The product complies with the requirements of the Medical Device Directive 93/42/EEC	
Batch number	
Please observe the instructions for use	
Article number/order number	

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Suture Material Packaging

Handling Steps

RacePack®

1. Open non-sterile outer package



DDP (Direct Dispense Packaging)

2. Transfer to sterile field



Handling Steps

RacePack®

DDP (Direct Dispense Packaging)

3. Tear off opening system indicated by the coloured arrows



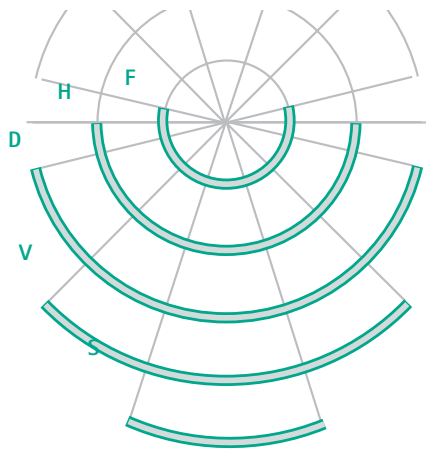
4. Quick and direct gripping of the needle



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Needles for Veterinary Surgery

Needle Angle of Curvature



- S 1/8 circle
- V 1/4 circle
- D 3/8 circle
- H 1/2 circle
- F 5/8 circle

Others

- J Hook
- P Progressive
- SK Ski
- G Straight

- Easyslide**
300 Quality Steel
- Easyslide B**
Black, glare-free needles
- Dermaslide®**
Needle especially for skin closure

- CV-Pass**
Needles for cardiovascular surgery
- CV-Pass easyblack**
Black, glare-free needles for cardiovascular surgery

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Needles for Veterinary Surgery

Needle Nomenclature

A	Needle curvature								
	S	V	D	H	F	G	P	J	SK
	1/8 circle	1/4 circle	3/8 circle	1/2 circle	5/8 circle	straight	progressive/ asymptotic	hook	ski

B	Needle body			
	G	R	S	L
	trapezoidal micro engraved body	round body	cutting	lancet

C	Needle tip							
	T	N	S	C	M	MP	m	mV
	trocac tip	blunt tip	cutting tip	short, cutting tip	micro-point	microtip/ precision	micro- needle	micro vascular

12	Needle length
	The numbers indicate the distance in mm between the needle tip and needle end, measured on the external curve of the needle.

D	Further information						
	f	ff	s	ss	v	b	TO
	thin bodied needle	extra thin bodied needle	strong needle body	very strong needle body	break-off needle	black needle	take off removable needle, with a straight tug of the needle holder, the needle can be removed from the suture fiber

Example

HRT 37s = 1/2 circle round bodied needle with trocac tip, length 37 mm, strong needle body

B. Braun Sutures

Needles for Veterinary Surgery

Needle Overview

Cutting Needles

DS HS

Cutaneous needles: The three edged external cutting body of the needle can be used for suturing tough tissue. The three edges run along the entire needle length and provide optimum piercing capability alongside a good cosmetic result.



Cutting Needles with Microtips

DSMP / DGMP **NEU**

The cutting tip of this slimline precision needle is hand-cut and, with minimal trauma, allows tissue penetration, fine sutures in tough tissue and good cosmetic results.



Round-Bodied Needles

HR GR




The round body of the needle tapers into a fine, sharp needle tip. The body flattens out in the middle section of the needle, which ensures a secure fit in the needle holder. Round bodied needles only pierce the tissue, they do not cut it, so they are suitable for suturing soft tissue.



B. Braun Sutures

Needles for Veterinary Surgery

Needle Overview

Round Bodied Needle with Trocar Tip	DRT HRT
<p>The round bodied needle has a four-sided cutting tip. This allows tough tissue to be easily pierced with minimal trauma.</p>	
Round Bodied Needle with Short Cutting Tip	HRC DRC
<p>The specially shaped round bodied needle with short cut tip makes tough tissue easier to pierce. The specialist needle for fine anastomoses and difficult tissue conditions.</p>	
Lancet (Spatula) Needles	DLM
<p>The lancet needle is a variant of the spatula needle. Its special needle tip is designed to pass through ophthalmic structures without damaging the upper and lower layer of stroma.</p>	

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Dermaslide® – DGMP

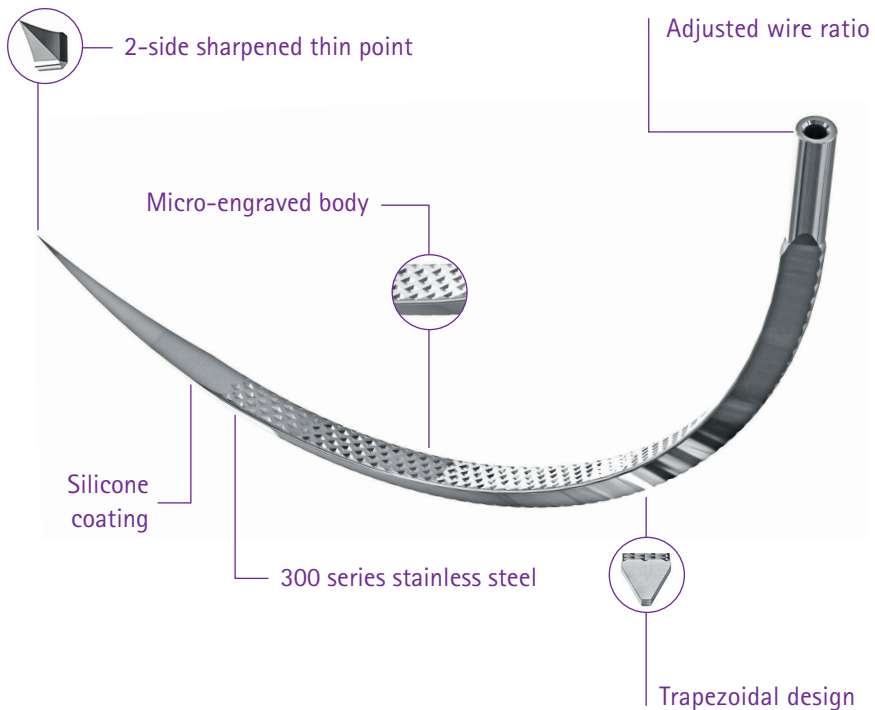
The New Needle with Micro-engraved Body

Advantages

- Smooth passage through tissue
- Maintains sharpness
- Good stability in needle holder

Available for:

- Optilene®
- Dafilon®
- Monosyn®
- Monosyn® Quick



Tissue-specific Application Recommendations

Dog and Cat

Absorbable					
		Monosyn® Quick	Monosyn®	Novosyn®	MonoPlus®
		Monofilament Glyconate	Monofilament Glyconate	Braided Poly(glycolide-co-L-lactide 90/10) Coated	Monofilament Poly-p-dioxanone
Absorbable 50 % loss of tensile strength	Short-term	6-7 days			
	Mid-term		14 days	21 days	
	Long-term				35 days
Skin	Dog: 4/0 - 2/0	+	++	+	++
	Cat: 4/0				
Subcutis	Dog: 4/0 - 3/0	++	++	+	+
	Cat: 4/0 - 3/0				
Mucosa	Dog: 5/0 - 3/0	++	++	+	+
	Cat: 5/0 - 4/0				
Muscles	Dog: 3/0 - 0	-	++	+	++
	Cat: 3/0 - 2/0				
Tendons	Dog: 2/0 - 1	-	-	+	++
	Cat: 3/0 - 2/0				
Joint Capsule	Dog: 3/0 - 0	-	-	+	++
	Cat: 3/0				
Small Intestine	Dog: 5/0 - 3/0	+	++	+	++
	Cat: 5/0 - 4/0				
Colon	Dog: 5/0 - 3/0	-	++	+	++
	Cat: 5/0 - 4/0				
Bladder	Dog: 5/0 - 4/0	++	++	+	++
	Cat: 5/0 - 4/0				
Uterus	Dog: 4/0 - 2/0	++	++	+	+
	Cat: 4/0 - 3/0				
Abdominal Wall	Dog: 3/0 - 1	-	++	+	++
	Cat: 3/0 - 2/0				
Ligature	Dog: 3/0 - 0	-	++	++	++
	Cat: 3/0 - 2/0				
Edge of Eye Lid	Dog: 5/0 - 4/0	+	++	++	+
	Cat: 5/0 - 4/0				
Hernias	Dog: 3/0 - 2/0	-	-	-	++
	Cat: 3/0 - 2/0				

Material of choice ++ very good + good - unsuitable

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Tissue-specific Application Recommendations

Dog And Cat

Non-absorbable				
		Optilene®	Dafilon®	Supramid®
		Polypropylene Polyethylene	Monofilament Polyamide 6/6.6	Pseudo- monofilament Polyamide 6/6.6
Skin	Dog: 4/0 - 2/0	++	++	++
	Cat: 4/0			
Subcutis	Dog: 4/0 - 3/0	-	-	-
	Cat: 4/0 - 3/0			
Mucosa	Dog: 5/0 - 3/0	+	-	-
	Cat: 5/0 - 4/0			
Muscles	Dog: 3/0 - 0	+	-	-
	Cat: 3/0 - 2/0			
Tendons	Dog: 2/0 - 1	++	+	+
	Cat: 3/0 - 2/0			
Joint Capsule	Dog: 3/0 - 0	++	+	+
	Cat: 3/0			
Small Intestine	Dog: 5/0 - 3/0	+	-	-
	Cat: 5/0 - 4/0			
Colon	Dog: 5/0 - 3/0	+	-	-
	Cat: 5/0 - 4/0			
Bladder	Dog: 5/0 - 4/0	+	-	-
	Cat: 5/0 - 4/0			
Uterus	Dog: 4/0 - 2/0	-	-	-
	Cat: 4/0 - 3/0			
Abdominal Wall	Dog: 3/0 - 1	+	+	+
	Cat: 3/0 - 2/0			
Ligature	Dog: 3/0 - 0	+	+	+
	Cat: 3/0 - 2/0			
Edge of Eye Lid	Dog: 5/0 - 4/0	++	++	-
	Cat: 5/0 - 4/0			
Hernias	Dog: 3/0 - 2/0	++	+	-
	Cat: 3/0 - 2/0			

Material of choice ++ very good + good - unsuitable

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Tissue-specific Application Recommendations

Cattle and Calf

Absorbable					
		Monosyn® Quick	Monosyn®	Novosyn®	MonoPlus®
		Monofilament Glyconate	Monofilament Glyconate	Braided Poly(glycolide-co-l-lactide 90/10) Coated	Monofilament Poly-p-dioxanone
Absorbable 50 % loss of tensile strength	Short-term	6-7 days			
	Mid-term		14 days	21 days	
	Long-term				35 days
Colon	2/0 - 3/0	-	++	+	++
Abomasum	2/0	-	++	+	++
Rumen	2/0 - 0	-	++	+	++
Appendix	2/0 - 0	-	++	+	++
Uterus	0 - 2	-	++	+	++
Bladder	2/0	-	++	+	++
Abdominal Wall / Muscles	1 - 2	-	++	+	++
Muscles	2/0 - 2	-	++	+	++
Subcutis	0 - 1	-	++	+	++
Skin	0 - 2	-	++	+	++
Umbilical Hernia	2/0 - 1	-	+	+	++
Teat Cistern	3/0 - 4/0	++	++	+	+
Groin Seam	2/0 - 0	-	++	+	++
Tendons	0 - 2	-	-	-	++
Corneal Injury	4/0 - 6/0	-	-	++	-

Material of choice ++ very good + good - unsuitable

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Tissue-specific Application Recommendations

Cattle and Calf

Non-absorbable				
		Optilene®	Dafilon®	Supramid®
		Polypropylene Polyethylene	Monofilament Polyamide 6/6.6	Pseudo- monofilament Polyamide 6/6.6
Colon	2/0 - 3/0	+	-	-
Abomasum	2/0	+	-	-
Rumen	2/0 - 0	+	-	-
Appendix	2/0 - 0	+	-	-
Uterus	0 - 2	+	-	-
Bladder	2/0	+	-	-
Abdominal Wall / Muscles	1 - 2	+	-	-
Muscles	2/0 - 2	+	-	-
Subcutis	0 - 1	+	-	-
Skin	0 - 2	++	++	++
Umbilical Hernia	2/0 - 1	++	+	+
Teat Cistern	3/0 - 4/0	-	-	-
Groin Seam	2/0 - 0	++	++	++
Tendons	0 - 2	++	+	-
Corneal Injury	4/0 - 6/0	++	++	-

Material of choice ++ very good + good - unsuitable

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Tissue-specific Application Recommendations

Horse

Absorbable					
		Monosyn® Quick	Monosyn®	Novosyn®	MonoPlus®
		Monofilament Glyconate	Monofilament Glyconate	Braided Poly(glycolide-co-l-lactide 90/10) Coated	Monofilament Poly-p-dioxanone
Absorbable 50 % loss of tensile strength	Short-term	6-7 days			
	Mid-term		14 days	21 days	
	Long-term				35 days
Skin	2/0 - 1	-	++	+	++
Subcutis	2/0 - 0	-	++	+	++
Mucosa	2/0 - 0	++	++	+	+
Tendons	2/0 - 1	-	-	-	++
Joint Capsule	0 - 1	-	+	+	++
Small Intestine	3/0 - 2/0	-	+	+	++
Colon	2/0 - 0	-	+	+	++
Appendix	2/0 - 0	-	+	+	++
Abdominal Wall	0 - 2	-	-	+	++
Hernias	1 - 2	-	+	+	++
Edge of Eye Lid	3/0 - 4/0	-	++	+	++
Corneal Injury	5/0 - 6/0	-	-	++	-

Material of choice ++ very good + good - unsuitable

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Tissue-specific Application Recommendations

Horse

Non-absorbable				
		Optilene®	Dafilon®	Supramid®
		Polypropylene Polyethylene	Monofilament Polyamide 6/6.6	Pseudo- monofilament Polyamide 6/6.6
Skin	2/0 - 1	++	++	++
Subcutis	2/0 - 0	-	-	-
Mucosa	2/0 - 0	+	+	+
Tendons	2/0 - 1	++	-	-
Joint Capsule	0 - 1	++	-	-
Small Intestine	3/0 - 2/0	+	-	-
Colon	2/0 - 0	+	-	-
Appendix	2/0 - 0	+	-	-
Abdominal Wall	0 - 2	+	-	-
Hernias	1 - 2	++	-	-
Edge of Eye Lid	3/0 - 4/0	++	+	+
Corneal Injury	5/0 - 6/0	++	++	-

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