Saddle Stitch Thread Length

Bench card: how much thread to cut for any seam

THE FORMULA

Thread to cut = Seam x 2 x (1 + Stack / Pitch) + 2 x Tail

Stack = total thickness of all layers sewn. Pitch = hole spacing (same units as stack). Tail = working length at each needle.

Why it works: in a saddle stitch each of the two threads passes through every hole once (one stack thickness) and runs along one face to the next hole (one pitch). Per hole that is 2 x (pitch + stack) of thread, so per unit of seam it is 2 x (1 + stack / pitch). This is the same arithmetic as RandyScott's 2008 formula on leatherworker.net: ((thickness x stitches per inch) x 2) + 2 inches of thread per inch of seam.

MULTIPLIER (thread per unit of seam, before tails)

Stack mm (oz)	2.7 mm 9.4 spi	3.0 mm 8.5 spi	3.38 mm 7.5 spi	3.85 mm 6.6 spi	4.0 mm 6.3 spi	5.0 mm 5.1 spi	6.0 mm 4.2 spi
2 (5 oz)	3.5x	3.3x	3.2x	3.0x	3.0x	2.8x	2.7x
3 (8 oz)	4.2x	4.0x	3.8x	3.6x	3.5x	3.2x	3.0x
4 (10 oz)	5.0x	4.7x	4.4x	4.1x	4.0x	3.6x	3.3x
5 (13 oz)	5.7x	5.3x	5.0x	4.6x	4.5x	4.0x	3.7x
6 (15 oz)	6.4x	6.0x	5.6x	5.1x	5.0x	4.4x	4.0x
7 (18 oz)	7.2x	6.7x	6.1x	5.6x	5.5x	4.8x	4.3x
8 (20 oz)	7.9x	7.3x	6.7x	6.2x	6.0x	5.2x	4.7x
10 (25 oz)	9.4x	8.7x	7.9x	7.2x	7.0x	6.0x	5.3x
12 (30 oz)	10.9x	10.0x	9.1x	8.2x	8.0x	6.8x	6.0x

oz converted at 1 oz = 1/64 in = 0.397 mm. Two layers of 4 oz is a 3.2 mm stack. Read across to your iron's pitch.

WHY SHORT SEAMS NEED MORE (total thread / seam, tails of 12 in each needle)

Seam	3.2 mm stack, 3.85 mm iron	4.8 mm stack, 4 mm iron	6.8 mm stack, 5 spi
3 in	35 in (11.7x)	37 in (12.4x)	38 in (12.7x)
6 in	46 in (7.7x)	50 in (8.4x)	52 in (8.7x)
12 in	68 in (5.7x)	77 in (6.4x)	80 in (6.7x)
24 in	112 in (4.7x)	130 in (5.4x)	136 in (5.7x)
48 in	200 in (4.2x)	235 in (4.9x)	249 in (5.2x)

The tails are a fixed cost. On a 3 in seam they double the thread; on a 48 in seam they barely register. That is why a short seam feels like it needs 6x and a long one 4x. This is a geometric minimum: it does not count thread lost to tension, slanted diamond holes or a backstitch. Cut a little long; a short thread mid-seam costs more than the waste.

Thread Length Worksheet

Fill in per seam. Keep one copy per project.

SEAM 1

A. Seam length (in or cm)	_____
B. Stack thickness, all layers (mm)	_____
C. Iron pitch (mm) [25.4 / spi]	_____
D. Multiplier 2 x (1 + B / C)	_____
E. Seam thread A x D	_____
F. Tails (2 x working length)	_____
G. Cut E + F (round up)	_____

SEAM 2

A. Seam length (in or cm)	_____
B. Stack thickness, all layers (mm)	_____
C. Iron pitch (mm) [25.4 / spi]	_____
D. Multiplier 2 x (1 + B / C)	_____
E. Seam thread A x D	_____
F. Tails (2 x working length)	_____
G. Cut E + F (round up)	_____

SEAM 3

A. Seam length (in or cm)	_____
B. Stack thickness, all layers (mm)	_____
C. Iron pitch (mm) [25.4 / spi]	_____
D. Multiplier 2 x (1 + B / C)	_____
E. Seam thread A x D	_____
F. Tails (2 x working length)	_____
G. Cut E + F (round up)	_____

Sources: RandyScott, leatherworker.net topic 2862 (2008); multipliers reported by makers on leatherworker.net topics 9149 and 59777; pitch-to-spi from the Amy Roke iron table at rmleathersupply.com. Full links in the post at marcellinony.com.