

## Sewn Loop Break Test Results

We tested four stitch patterns – bar tacks, diamond, “W” and box X stitch – to determine if there was one winning pattern that had the highest MBS (minimum breaking strength) results. All stitch patterns were sewn at 8 SPI (stitches per inch) with Tex 90 thread and a size 20 needle. Below are the results of our break tests.

10 BAR TACKS					
	2" SEAT BELT WEBBING (#120264)		1" TUBULAR POLY (#82300)	1" HEAVY WEIGHT NYLON (#1271)	
	TEST 306	TEST 307	TEST 312	TEST 317	TEST 318
<b>WEBBING PUBLISHED MBS</b>	4,720 lbs.	4,720 lbs.	2,700 lbs.	4,700 lbs.	4,700 lbs.
<b>TOTAL INCHES OF STITCHING</b>	87.5"	87.5"	37.5"	37.5"	37.5"
<b>THREAD / SPI (STITCHES PER INCH)</b>	Tex 90 / 8 SPI	Tex 90 / 8 SPI	Tex 90 / 8 SPI	Tex 90 / 8 SPI	Tex 90 / 8 SPI
<b>EXPECTED STITCHING MBS</b>	15,750 lbs.	15,750 lbs.	6,750 lbs.	6,750 lbs.	6,750 lbs.
<b>ACTUAL STITCHING MBS</b>	Undetermined	Undetermined	2,950 lbs.	5,850 lbs.	5,900 lbs.
<b>WHAT BROKE FIRST?</b>	Webbing	Webbing	Stitching, Then Webbing	Bar Tacks Broke Diagonally	Bar Tacks Broke Diagonally
<b>RESULTS MEET EXPECTATIONS?</b>	Yes and No	Yes and No	Acceptable	Acceptable	Acceptable
<b>DID WEBBING FAIL PUBLISHED MBS?</b>	Yes - Webbing Broke at 4,150 lbs.	Yes - Webbing broke at 4,550 lbs.	No	No	No
<b>NOTES</b>	Stitch pattern should be stronger than webbing, so as expected webbing broke first. Webbing broke around 600 lbs. lower than its published MBS.	Webbing broke just below the first bar tack. Webbing was closer to reaching webbing published MBS. Stitching remained intact.	It appears the stitching was ripped through half of the first bar tack. It's inconclusive whether webbing or stitching broke, or both. Either way, successful stitch pattern.	Stitching broke below expected stitching MBS but higher than webbing published MBS. Successful stitch pattern.	Stitching broke below expected stitching MBS but higher than webbing published MBS. Successful stitch pattern.

DIAMOND					
	2" SEAT BELT WEBBING (#120264)		1" TUBULAR POLY (#82300)	1" HEAVY WEIGHT NYLON (#1271)	
	TEST 308	TEST 309	TEST 314	TEST 319	TEST 320
<b>WEBBING PUBLISHED MBS</b>	4,720 lbs.	4,720 lbs.	2,700 lbs.	4,700 lbs.	4,700 lbs.
<b>TOTAL INCHES OF STITCHING</b>	28.5" including bar tacks	28.5" including bar tacks	22.5" including bar tacks	22.5" including bar tacks	22.5" including bar tacks
<b>THREAD / SPI (STITCHES PER INCH)</b>	Tex 90 / 8 SPI	Tex 90 / 8 SPI	Tex 90 / 8 SPI	Tex 90 / 8 SPI	Tex 90 / 8 SPI
<b>EXPECTED STITCHING MBS</b>	5,130 lbs.	5,130 lbs.	4,050 lbs.	4,050 lbs.	4,050 lbs.
<b>ACTUAL STITCHING MBS</b>	4,200 lbs.	4,700 lbs.	3,000 lbs.	4,750 lbs.	4,950 lbs.
<b>WHAT BROKE FIRST?</b>	All Stitching	Stitching, Then Webbing	Stitching, Then Webbing	All Stitching	All Stitching
<b>RESULTS MEET EXPECTATIONS?</b>	Slightly Below Desired	Acceptable	Acceptable	Exceed	Exceed
<b>DID WEBBING FAIL PUBLISHED MBS?</b>	No	Yes - webbing broke at 4,700 lbs.	No	No	No
<b>NOTES</b>	Stitching was sewn at higher MBS than webbing. Webbing should have broken first.	Webbing broke after it ripped out the first bar tack and only a little of the diamond stitching. Rest of diamond pattern remained intact. Successful stitch pattern.	Webbing broke after it ripped through first bar tack. Entire diamond pattern remained intact. Successful stitch pattern.	Stitching broke higher than expected stitching MBS AND webbing published MBS. Very successful stitch pattern.	Stitching broke higher than expected stitching MBS AND webbing published MBS. Very successful stitch pattern.

## W PATTERN

	2" SEAT BELT WEBBING (#120264)		1" TUBULAR POLY (#82300)	1" HEAVY WEIGHT NYLON (#1271)	
	TEST 310	TEST 311	TEST 313	TEST 321	TEST 322
<b>WEBBING PUBLISHED MBS</b>	4,720 lbs.	4,720 lbs.	2,700 lbs.	4,700 lbs.	4,700 lbs.
<b>TOTAL INCHES OF STITCHING</b>	26.25" including bar tacks	24" including bar tacks	20.25" including bar tacks	20.25" including bar tacks	20.25" including bar tacks
<b>THREAD / SPI (STITCHES PER INCH)</b>	Tex 90 / 8 SPI	Tex 90 / 8 SPI	Tex 90 / 8 SPI	Tex 90 / 8 SPI	Tex 90 / 8 SPI
<b>EXPECTED STITCHING MBS</b>	4,725 lbs.	4,320 lbs.	3,645 lbs.	3,645 lbs.	3,645 lbs.
<b>ACTUAL STITCHING MBS</b>	4,300 lbs.	4,300 lbs.	2,900 lbs.	5,100 lbs.	4,650 lbs.
<b>WHAT BROKE FIRST?</b>	Stitching, Then Webbing	Stitching, Then Webbing	First Bar Tack	All Stitching	All Stitching
<b>RESULTS MEET EXPECTATIONS?</b>	Acceptable	Acceptable	Acceptable	Exceed	Exceed
<b>DID WEBBING FAIL PUBLISHED MBS?</b>	Yes - Webbing broke at 4,300 lbs.	Yes - Webbing broke at 4,300 lbs.	No	No	No
<b>NOTES</b>	Webbing broke after it ripped through first bar tack and some "W" stitching.	Webbing broke after it ripped through first bar tack and 1/3 of "W" stitching.	Webbing broke after it ripped through first bar tack. Rest of stitching remained intact. Successful stitch pattern.	Stitching broke higher than expected stitching MBS AND webbing published MBS. Very successful stitch pattern.	Stitching broke higher than expected stitching MBS. Successful stitch pattern.

BOX X		NO STITCHING		
	1" TUBULAR POLY (#82300)	2" SEAT BELT WEBBING (#120264)	1" TUBULAR POLY (#82300)	1" HEAVY WEIGHT NYLON (#1271)
	<b>TEST 315</b>	<b>TEST 324</b>	<b>TEST 316</b>	<b>TEST 323</b>
<b>WEBBING PUBLISHED MBS</b>	2,700 lbs.	4,720 lbs.	2,700 lbs.	4,700 lbs.
<b>TOTAL INCHES OF STITCHING</b>	9"	—	—	—
<b>THREAD / SPI (STITCHES PER INCH)</b>	Tex 90 / 8 SPI	—	—	—
<b>EXPECTED STITCHING MBS</b>	1,620 lbs.	—	—	—
<b>ACTUAL STITCHING MBS</b>	1,800 lbs.	—	—	—
<b>WHAT BROKE FIRST?</b>	All Stitching	Webbing	Webbing	Webbing
<b>RESULTS MEET EXPECTATIONS?</b>	Exceed	Exceed	Exceed	Exceed
<b>DID WEBBING FAIL PUBLISHED MBS?</b>	No	No	No	No
<b>NOTES</b>	Stitching broke at higher MBS than expected stitching MBS. Successful stitch pattern.	Webbing broke at 5,100 lbs.	Webbing broke at 3,050 lbs.	Webbing broke at 5,800 lbs.