DETERMINATION OF BROKEN FABRIC FIBERS IN A SEWN SEAM

Application

This procedure is used to determine the cut or break resistance of the knit fabric yarn/fiber to the sewing needle during sewing process.

Equipment Required

Fixtures

Fixture shown in Figure 2 or equivalent.

Clamps - vice grip clamps

The bar clamps must allow a maximum 300 mm width of test specimens to be accommodated. The clamps used on each end of the test specimens shall grip the sample firmly and evenly across the ends.

Weight

A weight is attached to the clamp on the suspended end of the test specimen. The clamp and the weight together shall total 12.25 kg (27 lb) unless otherwise specified.

Sewing Machine

An Industrial Sewing Machine capable of producing a lock stitched seam as described under Procedure.

Needle

Fabric Supplier to recommend the appropriate production representative needle size/type

Thread

WSS-M15H51-B2 respectively or equivalent TEX 90, for top and bottom, unless otherwise specified in the Engineering Material Specification.

Brush

Brush Bristles – black nylon, 0.25mm (10-mil) diameter.
Source - The Fuller Brush Co

Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5% relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Date	Action	Revisions
2010 06 11	Activated	M. Dumitrescu, NA

Procedure

1. Cut specimens of 300 x 160 mm dimensions from the fabric sample as follows:

Cutting direction of 300 mm	Number of sewn test specimens	Sewing direction of specimens
With Machine Direction (WMD)	3	WMD to WMD
Against Machine Direction (AMD)	3	AMD to AMD
Bias 45°	3	Bias to WMD
	3	Bias to AMD

Unless otherwise specified, samples shall be taken a minimum of one tenth the width from the selvage edge or no closer than 305 mm (12 in) from either end of the roll.

2 Prepare the test specimen by sewing each pair of cut samples along 300 mm side as shown in figure 1. Back tack samples to represent the production sewing process. Use a new needle to sew a new set of specimen.

3 Clamp the test specimen in assembly with the 300 mm side parallel to the clamps. Fasten the clamps firmly at each end of test specimen.

4 The upper bar clamp is attached to the supporting fixture and suspend the required (12.25 kg or 27 lbs) weight to the lower weight.

5 Allow the specimen to be suspended vertically for 5 minutes. Then brush along the seam line back and forth for 5 cycles using moderate pressure.

Sewn-Seam Construction

The stitch shall be a simple lock stitch with a stitch length of 4.0 – 5.0 mm (6+/-1 stitches/25 mm) and shall run 8 mm (+/- 2 mm) from the cut edges of the test specimen.

Evaluation

Examine the sewn seam for broken yarn and/or fibers and count the number of broken yarns and/or fibers per 250 mm of seam length. Report the results as the average of the total number of broken fibers/3 specimens tested in each direction. Do not evaluate the outer 25 mm at each end of the seam.

Report

Criteria	Results
Needle Type	
Thread Construction (Ford material spec or Tex #)	
WMD to WMD (average)	
AMD to AMD (average)	
Bias to WMD (average)	
Bias to AMD (average)	

Materials, parts, and equipment referenced in this document must be used and handled properly. Each party is responsible for determining proper use and handling in its facilities.

TEST SPECIMEN

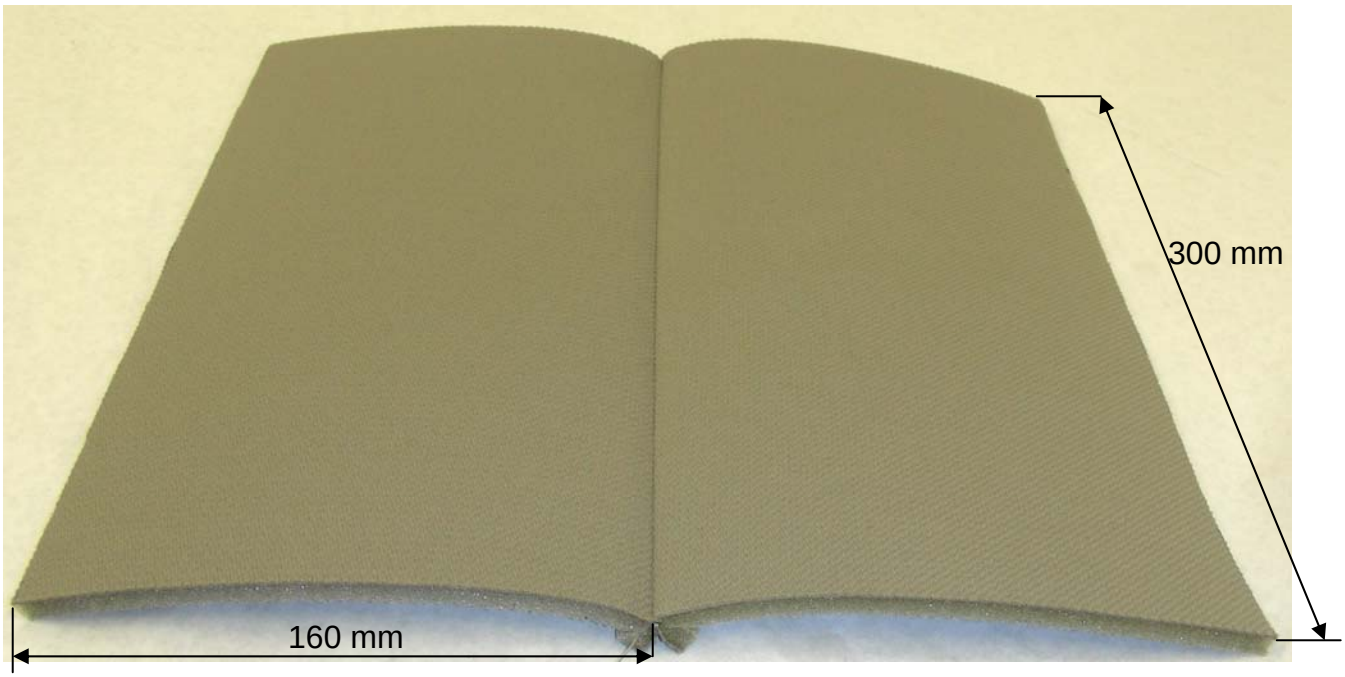

Figure 1 – Example Sewn Sample

FIXTURE

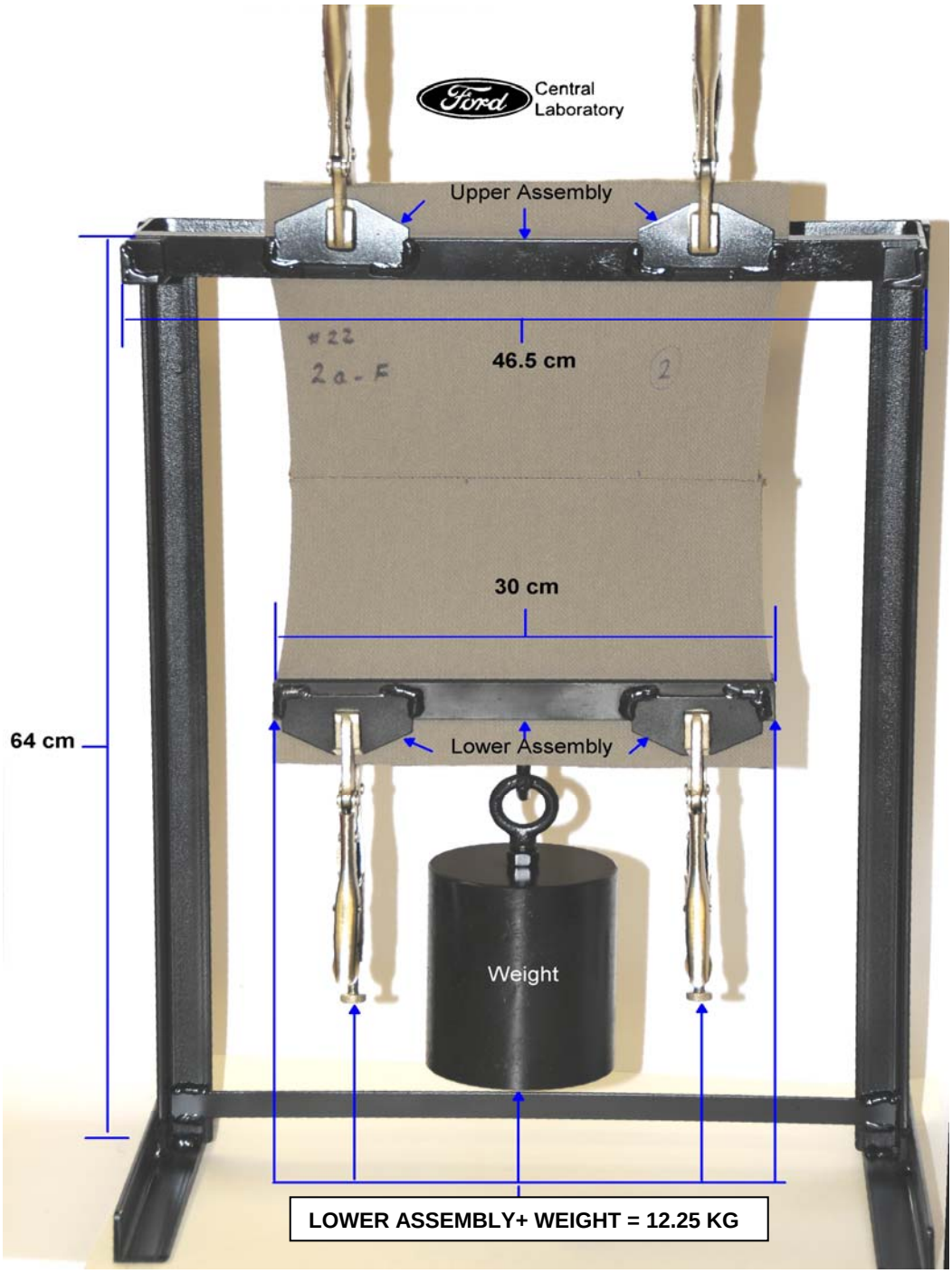

Figure 2 – Test set-up

Load is being applied at the center of the sample.