



May 10, 2019

Mr. Travis Shipman  
Sterling Rope Co Inc  
26 Morin St  
Biddeford, ME 04005-4413

Subject: Conforming Test Results for Project 4788883294  
File Number: MH28329

Dear Mr. Shipman:

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

This project was initiated to evaluate the Sterling Rope Anchorage Connector Sling per the requirements of ANSI/ASSE Z359.18, Safety Requirements for Anchorage Connectors for Active Fall Protection Systems, 2017 Edition (1<sup>st</sup> Edition, 2017-08-13). Testing has been completed, and the results were in compliance with the requirements. Details of the testing are attached.

This project was for testing only. No label or user requirements were conducted. No certification is being issued. We will retain the test data, however, in the event that you decide at a later time that you wish to use the test data for certification.

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This letter concludes our work under File MH28329, Project 4788883294. Arrangements are being made for the invoicing of charges incurred.

Sincerely,

A handwritten signature in black ink that reads "Andrew White".

Andrew White  
Engineer  
Personal Protective Equipment  
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Reviewed by:

A handwritten signature in black ink that reads "Beverly Wooten Stutts".

Beverly Wooten Stutts  
Staff Engineer  
Personal Protective Equipment

Z359.18 STATIC STRENGTH TEST - ANCHORAGE CONNECTORS:

ANSI/ASSE Z359.18-2017,  
SECTION 4.2.1

1.0 SAMPLES

- 1.1 Three samples of each anchorage connector shall be tested.
- 1.2 This test applies to all types of anchorage connectors.

2.0 APPARATUS

- 2.1 Static Tensile Test Equipment: The static tensile test equipment shall be as required in Section 4.1 of Standard and shall pull at a uniform rate of not greater than 2 inches per minute (51 mm per minute).

3.0 METHOD

3.1 Type A and Type T Anchorage Connectors

- 3.1.1 Install the anchorage connector in the test fixture such that the load will be applied in the critical direction of loading that the manufacturer allows.
- 3.1.2 If the manufacturer allows the load to be applied in more than one direction, then all directions shall be tested.
- 3.1.3 Apply the load and maintain the load above 5000 lbf (22.2 kN) for at least three minutes.
- 3.1.4 Release the load and evaluate the anchorage connector.

3.2 Type D Anchorage Connectors

- 3.2.1 Install the anchorage connector in the test fixture such that the load will be applied in the critical direction of loading that the manufacturer allows.
- 3.2.2 If the manufacturer allows the load to be applied in more than one direction, then all directions shall be tested.
- 3.2.3 Apply load that is at least 1.5 times the maximum arrest force measured in the Dynamic Strength Test or at least 2700 lbf (12.0 kN) but no more than 5000 lbf (22.2 kN.) Maintain the load for at least three minutes.
- 3.2.4 Release the load and evaluate the anchorage connector.

Z359.18 STATIC STRENGTH TEST - ANCHORAGE CONNECTORS:  
(CONT'D)

ANSI/ASSE Z359.18-2017,  
SECTION 4.2.1

4.0 REQUIREMENTS

- 4.1 Type A Anchorage Connectors shall withstand static load of at least 5000 lbf (22.2 kN).
- 4.2 Type T Anchorage Connectors shall withstand static load of at least 5000 lbf (22.2 kN).
- 4.3 Type D Anchorage Connectors shall withstand static load of at least 1.5 times the maximum arrest force in the Dynamic Strength Test and 2700 lbf (12.0 kN), but not greater than 5000 lbf (22.2 kN).
- 4.4 For all types of anchorage connectors, deformation where operable gates are used is allowed, but shall not create of separation of more than 1/8 inch (3mm) between the gate and the body.

5.0 RESULTS

Model Designation	Sterling Rope Anchorage Connector Sling
Type	A
Direction of Load/Description of Test Set-Up	Choker around I-Beam

Sample	Hold 5000 lbf Load? (Yes/No)	Separation <1/8 inch? (Yes/No)	Pass/Fail
1	Yes	N/A	Pass
2	Yes	N/A	Pass
3	Yes	N/A	Pass

6.0 OBSERVATIONS

- 6.1 The anchorage connector did comply with the requirements.

Z359.18 DYNAMIC STRENGTH TEST- ANCHORAGE  
CONNECTORS:

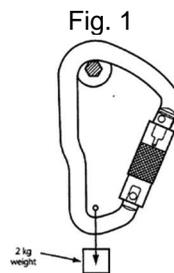
ANSI/ASSE Z359.18-2017,  
Section 4.2.2

1.0 SAMPLES

- 1.1 Three specimens of each anchorage connector shall be tested
- 1.1 Type A, Type T, and Type D Anchorage Connectors shall be subjected to this test.

2.0 CONDITIONING

- 2.1 Conditioning shall be at the wear point on the inside of the connection loop to simulate where connecting components from attached systems are expected to contact the connection point in service.
- 2.2 Non-Textile and Textile Abrasion Conditioning
  - 2.2.1 Three samples of each anchorage connector shall be conditioned as follows: The specimen shall be placed with its inside section against a 10mm (3/8 in.) hexagonal steel bar, ASTM A108, UNS G10180, cold drawn, and case hardened to RC 58060 to a depth of 0.8 in.
  - 2.2.2 On a test bench, at the other end of the test specimen, a weight of 2 kg shall be suspended for the duration of the test (see Fig. 1).
  - 2.2.3 The bar shall rotate against the inside section of the test specimen for 50,000 revolutions at a speed not less than 50 times per minute and no more than 75 times per minute.
    - 2.2.3.1 If a wear indicator is designed into the device, the number of abrasion cycles may be reduced to the number required for the wear indicator to indicate the maximum wear permitted by the manufacturer.
  - 2.2.4 An unused section of the hexagonal bar shall be used to condition each specimen.



Z359.18 DYNAMIC STRENGTH TEST- ANCHORAGE  
CONNECTORS: (CONT'D)

ANSI/ASSE Z359.18-2017,  
Section 4.2.2

3.0 APPARATUS

- 3.1 Drop test structure shall have sufficient height and lateral clearance within the drop zone beneath the test anchorage or anchorage connector on the structure to perform the drop tests, without members of the structure or its base interfering with or obstructing the drops during testing.
  - 3.1.1 The permitted maximum elastic deformation of the test anchorage and test anchorage connector at the point of attachment of the test specimen shall be 0.04 inches (1.0mm) when subjected to load of 4,500 lbf (20kN) in the anticipated direction of loading.
- 3.2 Test Lanyard shall be at least four feet (1.2 m) long when measured from bearing point to bearing point.
  - 3.2.1 Test lanyard shall not elongate more than 8 in (200mm) when subjected to 4500 lbf (20 kN) force for 10 seconds.
  - 3.2.2 A new test lanyard may be used for each test.
- 3.3 The test weight shall be rigidly constructed of steel or equivalent material and shall weigh 128 kg.
- 3.4 A load cell shall be used to record the impact loads during the drop test for Type D Anchorage Connectors.
- 3.5 The test weight shall be released by a remotely operated quick-release mechanism that shall release the test weight without imparting any motion to it.

Z359.18 DYNAMIC STRENGTH TEST- ANCHORAGE  
CONNECTORS: (CONT'D)

ANSI/ASSE Z359.18-2017,  
Section 4.2.2

4.0 METHOD

4.1 Type A and Type T Anchorage Connectors

4.1.1 Install the conditioned anchorage connector in the test fixture such that the load will be applied in the critical direction of loading that the manufacturer allows.

4.1.2 If the manufacturer allows the load to be applied in more than one direction, then all directions shall be tested.

4.1.3 Install the arrest force measuring instrumentation on the connection point to be loaded.

4.1.4 Connect one end of the test lanyard to the connection point of the anchorage connector or to the arrest force measuring instrumentation, as applicable.

4.1.5 Connect the other end of the test lanyard to the test weight.

4.1.6 Raise the test weight to achieve a free fall distance of 3 ft (0.9 m).

4.1.7 Release the test weight by means of the quick-release mechanism.

4.1.8 Evaluate the anchorage connector.

4.2 Type D Anchorage Connectors

4.2.1 Install the conditioned anchorage connector in the test fixture such that the load will be applied in the critical direction of loading that the manufacturer allows.

4.2.2 If the manufacturer allows the load to be applied in more than one direction, then all directions shall be tested.

4.2.3 Install the arrest force measuring instrumentation on the connection point to be loaded.

4.2.4 Connect one end of the test lanyard to the connection point of the anchorage connector or to the arrest force measuring instrumentation.

4.2.5 Connect the other end of the test lanyard to the test weight.

4.2.6 Raise the test weight to achieve a free fall distance of 6 ft (1.8 m).

4.2.7 Release the test weight by means of the quick-release mechanism.

4.2.8 Evaluate the anchorage connector.

Z359.18 DYNAMIC STRENGTH TEST- ANCHORAGE  
CONNECTORS: (CONT'D)

ANSI/ASSE Z359.18-2017,  
Section 4.2.2

5.0 REQUIREMENTS

- 5.1 Type A Anchorage Connector shall successfully arrest the test weight.
- 5.2 Type T Anchorage Connector shall successfully arrest the test weight.
- 5.3 Type T Anchorage Connector shall successfully arrest the test weight.
- 5.4 For all types of anchorage connectors, deformation where operable gates are used is allowed, but shall not create of separation of more than 1/8 inch (3mm) between the gate and the body.

6.0 RESULTS

Model Designation	Sterling Rope Anchorage Connector Sling
Type	A
Direction of Load/Description of Test Set-Up	Choker around I-Beam

Sample	Arrest Test Weight? (Yes/No)	Separation <1/8 inch? (Yes/No)	Pass/Fail
1	Yes	N/A	Pass
2	Yes	N/A	Pass
3	Yes	N/A	Pass

7.0 OBSERVATIONS

- 7.1 The anchorage connector did comply with the requirements.

Z359.18 RESIDUAL DYNAMIC STRENGTH TEST-  
ANCHORAGE CONNECTORS:

ANSI/ASSE Z359.18-2017,  
Section 4.2.3

1.0 SAMPLES

- 1.1 Type A, Type T, and Type D Anchorage Connectors shall be subjected to this test.
- 1.2 Three specimens of each anchorage connector shall be tested.

2.0 APPARATUS

- 2.1 Drop test structure shall have sufficient height and lateral clearance within the drop zone beneath the test anchorage or anchorage connector on the structure to perform the drop tests, without members of the structure or its base interfering with or obstructing the drops during testing.
  - 2.1.1 The permitted maximum elastic deformation of the test anchorage and test anchorage connector at the point of attachment of the test specimen shall be 0.04 inches (1.0mm) when subjected to load of 4,500 lbf (20kN) in the anticipated direction of loading.
- 2.2 Test Lanyard shall be at least four feet (1.2 m) long when measured from bearing point to bearing point.
  - 2.2.1 Test lanyard shall not elongate more than 8 in (200mm) when subjected to 4500 lbf (20 kN) force for 10 seconds.
  - 2.2.2 Test lanyard(s) used for Dynamic testing shall be used.
- 2.3 The test weight shall be rigidly constructed of steel or equivalent material and shall weigh 128 kg.
- 2.4 The test weight shall be released by a remotely operated quick-release mechanism that shall release the test weight without imparting any motion to it.

3.0 METHOD

3.1 Type A and Type T Anchorage Connectors

- 3.1.1 Install the conditioned anchorage connector in the test fixture such that the load will be applied in the critical direction of loading that the manufacturer allows.
- 3.1.2 If the manufacturer allows the load to be applied in more than one direction, then all directions shall be tested.
- 3.1.3 Install the arrest force measuring instrumentation on the connection point to be loaded.
- 3.1.4 Connect one end of the test lanyard to the connection point of the anchorage connector or to the arrest force measuring instrumentation, as applicable.
- 3.1.5 Connect the other end of the test lanyard to the test weight.
- 3.1.6 Raise the test weight to achieve a free fall distance of 3 ft (0.9 m).

Z359.18 RESIDUAL DYNAMIC STRENGTH TEST-  
ANCHORAGE CONNECTORS: (CONT'D)

ANSI/ASSE Z359.18-2017,  
Section 4.2.3

- 3.1.7 Release the test weight by means of the quick-release mechanism.
- 3.1.8 The test weight shall remain suspended for at least one minute.
- 3.1.9 Evaluate the anchorage connector.
- 3.2 Type D Anchorage Connectors
  - 3.2.1 Install the conditioned anchorage connector in the test fixture such that the load will be applied in the critical direction of loading that the manufacturer allows.
  - 3.2.2 If the manufacturer allows the load to be applied in more than one direction, then all directions shall be tested.
  - 3.2.3 Install the arrest force measuring instrumentation on the connection point to be loaded.
  - 3.2.4 Connect one end of the test lanyard to the connection point of the anchorage connector or to the arrest force measuring instrumentation.
  - 3.2.5 Connect the other end of the test lanyard to the test weight.
  - 3.2.6 Raise the test weight to achieve a free fall distance of 3 ft (0.9 m).
  - 3.2.7 Release the test weight by means of the quick-release mechanism.
  - 3.2.8 The test weight shall remain suspended for at least one minute.
  - 3.2.9 Evaluate the anchorage connector.

Z359.18 RESIDUAL DYNAMIC STRENGTH TEST-  
ANCHORAGE CONNECTORS: (CONT'D)

ANSI/ASSE Z359.18-2017,  
Section 4.2.3

4.0 REQUIREMENTS

- 4.1 Type A Anchorage Connector shall successfully arrest the test weight and continue to support the test weight for an additional one minute.
- 4.2 Type T Anchorage Connector shall successfully arrest the test weight and continue to support the test weight for an additional one minute.
- 4.3 Type T Anchorage Connector shall successfully arrest the test weight and continue to support the test weight for an additional one minute.
- 4.4 For all types of anchorage connectors, deformation where operable gates are used is allowed, but shall not create separation of more than 1/8 inch (3mm) between the gate and the body.

5.0 RESULTS

Model Designation	Sterling Rope Anchorage Connector Sling
Type	A
Direction of Load/Description of Test Set-Up	Choker around I-Beam

Sample	Arrest Test Weight? (Yes/No)	Support Test Weight After Testing? (Yes/No)	Separation <1/8 inch? (Yes/No)	Pass/Fail
1	Yes	Yes	N/A	Pass
2	Yes	Yes	N/A	Pass
3	Yes	Yes	N/A	Pass

6.0 OBSERVATIONS

- 6.1 The anchorage connector did comply with the requirements.