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Technical Bulletin

October, 2020

Transverse Loading of Fall Protection Connector Hardware

Description

The purpose of this bulletin is to help provide clarity regarding new standard requirements concerning transverse loading testing of connecting hardware used in personal fall arrest systems. Transverse loading is the loading of connecting hardware, commonly referred to as snap hooks, rebar hooks, scaffold hooks, ladder hooks or carabiners, at right angles to the intended direction of load.

The American National Standard Institute (ANSI), a voluntary consensus standard, identifies performance and testing elements for these components within ANSI/ASSP Z359.12. The effective date for fall protection manufacturers to comply to the latest version of this standard, Z359.12-2019 is July 06, 2020. This version includes new requirements for transverse body loading testing and corresponding product marking.

Section 3.1.3.6 of the referenced standard identifies that all snaphooks and carabiners with gate opening larger than 1 in. (25 mm), shall be capable of withstanding a transverse body (dynamic) drop test as specified in 4.2.3.4. Permanent deformation shall be acceptable, provided that the deformation is not sufficient to release the gate from the nose by more than 0.125 in. (3.1 mm).

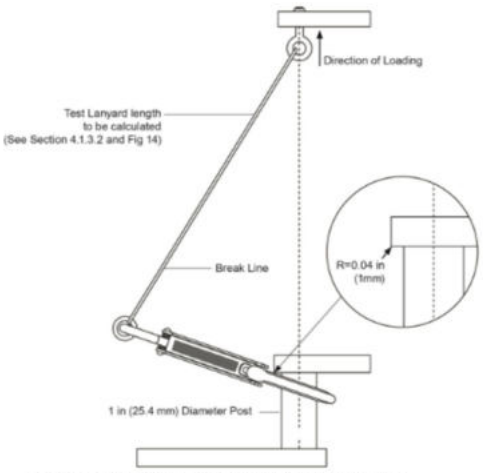

Figure 13: Example of Fixture to be Used for Static and Dynamic Transverse Body Loading

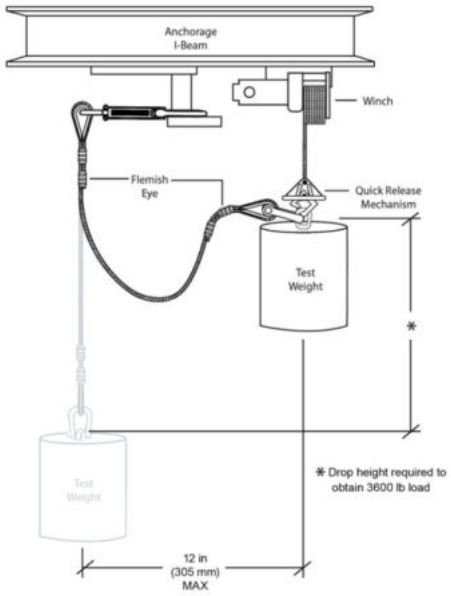

Figure 15: Dynamic Drop Test Configuration for Transverse Loading

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Prior to the 2019 version of ANSI/ASSP Z359.12, 3M Fall Protection offered a connecting hardware component designed and labeled as acceptable for use in transverse loading connections. This component was distributed by 3M under the product name Comfort Grip. Although not required as part of the previous standard revision, 3M tested the Comfort Grip to align with the testing requirements in 2019 ANSI/ASSP Z359.12-2019. This testing also aligned with CSA Z259.12-2016. The 3M Comfort Grip hook was specifically designed and approved by 3M for transverse load applications. As required by both current ANSI and CSA standards, this component is permanently stamped with a 3,600-pound transverse load rating on the body of the connecting hardware.

ANSI/ASSP Z359.12-2019 now requires all hooks with gate openings larger than one inch (1") to be tested to and identified as complying with the transverse load requirements and to be permanently marked with "Transverse Strength 3,600 LBS (16kN)". To meet this requirement, moving forward you will therefore begin to see all 3M connecting components with gate openings larger than one inch (1") marked and identified as being 3,600-pound transverse load rating on the body of the connecting hardware.

In all cases, 3M recommends the use of connecting component hardware that meets the ANSI/ASSP Z359.12 standard. Additionally, for transverse loading applications, 3M recommends the use of connecting component hardware that not only meets the standard, but also has been subjected to additional transverse loading application testing. For transverse loading applications, 3M approves the use of Comfort Grip hook (model 2000214) and Steel Double Action Rebar hooks (models 2000210 and 2109193).

All fall protection applications should be reviewed and approved by the employer identified competent person. As a best practice, when using snaphooks and carabiners in fall protection applications, it is recommended to terminate all connecting component hardware in an orientation that permits the snaphook or carabiner to align in its long axis from the eye to the bowl of the component. The application of transverse loading should only be conducted as a last option, and when needed should use connectors specifically intended for that application.

Contact 3M Fall Protection Technical Service if you have any questions or concerns.

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