Technical Bulletin

Subject **Weight Capacity of Capital Safety Fall Protection Equipment**

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For correctly dealing with the weight capacity of fall protection equipment (harness, lanyard or a lifeline), it is necessary to understand previously the three main basic principles or fundamentals of Fall Protection. They are:

- Arresting force: In Brazil, ABNT limits the arresting force to 6kN, around 600kgf. This value is due to the function of the human body limits, of 12kN, with a safety factor of 2. The arresting force is intrinsically linked to the energy absorber of the lanyards or arresting mechanism of the SRLs.
- Clearance: is essential for the effectiveness of a fall protection system, and must be informed by the lanyard manufacturer.
- Swing Fall. A side impact during a fall can be as severe as a collision with the ground, and can also cut the lifeline or the lanyard, if there is a contact with a sharp edge.

In Brazil, ABNT technical standards controlling the manufacturing of Fall Protection equipment use a rigid mass of 100 kg (220 pounds) to test such equipment, being it a cylinder of steel for lanyards and lifelines, and a mannequin (dorsal area) for full-body harness. It is reasonable to associate the weight used in test laboratories to the equipment capacity. Nevertheless, such association is not correct, because tests in laboratories make the equipment undergo extremely harsh conditions, never to happen in real life situations. Moreover, we must keep in mind that the bodies (cylinder and mannequin) used during the tests do not absorb energy, differently from a human body. Thus, a converting factor between the rigid mass and the human body must be taken into consideration, reaching an understanding that a rigid mass of 100 kg (220 pounds) is equivalent to a superior body mass. Despite this, many safety professionals, representing their employers and thinking in the worker protection, look for equipment that are tested and classified for users with bodily mass higher than 100 kg (220 pounds).

In North America, the components of fall systems, such as lanyards and lifelines, are usually classified for users with up to 140.6 kg (310 pounds), with a Fall Factor 2, which is the most severe condition of use. The agencies that control such classification are the OSHA (Occupational Health and Safety Administration, of the Department of Labor), that in Brazil would be the equivalent to the Labor and Employment Ministry, and to the ANSI (American National Standards Institute), that in Brazil would be the equivalent to the ABNT (Associação Brasileira de Normas Técnicas). For situations in which the combined weight of the user and tools are more than 310 pounds (140.6 kg) and up to 420 pounds (190.5 kg), there is equipment classified for such situations, as long as the Fall Factor is 1, or that the free fall be limited to 6 feet (1.83 m).

In Brazil the EPI testing for fall protection are always subjected to the harshest conditions, that is Fall Factor 2. By setting up a correlation between the two tests methodologies it is possible to say that all the equipment from Capital Safety are classified for users of up 140.6 kg (310 pounds) in a condition of Fall Factor 2, and that the arresting force will be lower than 6 kN.

Should it be necessary the use of equipment for a condition in which the combined weight of the user and tools is more than 140.6 kg (310 pounds), please contact Capital Safety Brazil.

If you have any queries of how this will affect you directly please contact our Technical Services Department for assistance: solutions@capitalsafety.com

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