Mobile Stand / Cart Instability Tests

Referencing IEC 60601-1 International Standard Third Edition

1.) 9.4.2 Ten (10) Degree ramp test

ME EQUIPMENT or its parts shall not overbalance when placed in any transport position of NORMAL USE on a plane inclined at an angle of 10° from the horizontal plane.

Prior to conducting the test, the ME EQUIPMENT is prepared as follows, this applies to all test listed in this document:

- Configure stand/cart to its worst case scenario when loaded with all its intended medical devices and accessories.

The test floor surface is to be hard and flat.

The ME EQUIPMENT is placed on a plane inclined at an angle of 10° from the horizontal plane. If the ME EQUIPMENT or its parts overbalances, it constitutes a failure.

2.) 9.4.2.3 Push test

a) ME EQUIPMENT having a mass of **55 lbs** or more shall not overbalance due to pushing, leaning, resting etc.

Compliance is checked by inspection and the following test:

The ME EQUIPMENT is placed on a horizontal plane and a force equal to **25 %** of its weight, but not more than **50 lb**, is applied in any direction, except a direction having an upward component. The force is applied at any point of the ME EQUIPMENT but not exceeding **59 inches** from the floor. The ME EQUIPMENT is prevented from sliding on the floor by a horizontal obstruction, not exceeding **0.785 inches height,** which is fastened flat on the floor. If the application of the test force results in lateral movement of the ME EQUIPMENT, increase the height of the obstruction to the minimum extent necessary to prevent lateral movement. If the ME EQUIPMENT overbalances, it constitutes a failure.

3.) 9.4.2.4 * Raised Threshold test

9.4.2.4.1 General

The means used for transportation of MOBILE ME EQUIPMENT, e.g. castors or wheels, shall not result in an unacceptable RISK when the MOBILE ME EQUIPMENT is moved

or parked in NORMAL USE.

MOBILE ME EQUIPMENT exceeding **99 lbs** shall be able to pass over a **0.785 inches** threshold. Passing over a **.0785 inches** threshold shall not result in an unacceptable RISK.

Compliance is checked by the following test:

The ME EQUIPMENT is configured in transport position with any SAFE WORKING LOAD in place as indicated in the ACCOMPANYING DOCUMENTS. The ME EQUIPMENT is moved as in NORMAL USE 10 times in forward direction over (up and down) a solid vertical plane obstruction with a rectangular cross-section, **0.785 inches high** and **3.15 inches wide** that is affixed flat on the floor. All wheels and castors are to impact the obstruction at a speed of .895 mph for manual MOBILE ME EQUIPMENT

It is unacceptable for ME EQUIPMENT to be unable to go over (up) the obstruction (due to small wheel diameter, for example). Overbalancing or any unacceptable RISK constitutes a failure.

4.) 9.4.3 Lock Brake Slide test

a) MOBILE ME EQUIPMENT shall be fitted with means (such as locking devices) intended to prevent any unwanted movement of the ME EQUIPMENT or its parts in the transport position.

   Compliance is checked by inspection.

b) MOBILE ME EQUIPMENT that is intended to be used on the floor shall not result in an unacceptable RISK due to unwanted lateral movement.

   Compliance is checked by the following test:

   Prior to the test, the ME EQUIPMENT is prepared as described in 9.4.2. The MOBILE ME EQUIPMENT is placed in its transport position (or in the worst case NORMAL USE position) with the SAFE WORKING LOAD in place, and the locking device (e.g. brakes) activated, on a hard flat surface inclined at **10°** from the horizontal plane. If castors are incorporated, they are positioned in their worst-case position. Following the initial elastic movement, initial creepage, and initial pivoting of castors, any further movement of the MOBILE ME EQUIPMENT greater than **2.165** inches (in relation to the inclined plane) constitutes a failure. The RISK due to any initial movement is assessed, taking into account the NORMAL USE of the ME EQUIPMENT.