

SANDBAG DRAG SURFACE CALIBRATION**20 m Sandbag Drag**

1. This component of the FORCE Evaluation has a strong predictive relationship with the common operational task of extricating a casualty from a vehicle. The performance standard is based on this predictive relationship and equates to safely removing a CAF personnel of average weight.

Research

2. Dragging four sandbags across the foam mat surface requires a minimal force of 330N (33.6 kg / 75 lbs) and is linked with the performance standard for the Vehicle Extrication task of an 86 kg (~190 lb) casualty rescue. Various sandbag configurations have been tested to ensure 330N is maintained across the most common indoor testing surfaces.

Approved Surfaces

3. To be appropriate for a valid FORCE Evaluation, the chosen surface should be clean, dry, hard, flat, smooth, and uniform across a 25 m section. Hardwood gym floors, polished concrete floors, rubber cushioned flooring, vinyl tile, taut vinyl mats and rubberized tracks have all been tested and approved for use with minor weight modifications to ensure a consistent drag force.

Adjustments

4. Additional weight may need to be added to achieve the required drag force. The force required to move the sandbags is much less than the weight added, and therefore adding full sandbags and / or 10 kg Olympic plates should be sufficient for all approved surfaces.

Surfaces to Avoid

5. Carpets, rough concrete, asphalt, grass, and ceramic tile have not been approved because the force is too variable or causes significant damage to the sandbag's fabric.
6. Alternative options are being researched and additional suggestions will be considered.

TOOL 6

Additional Variables

7. In addition to selecting an appropriate testing surface, evaluators need to be aware of the other factors that could significantly influence the physical demand of the drag.
 - Temperature / humidity
 - Degradation in the sandbag or floor surface
 - Peeling floor tape
 - Water leaks or spills
 - Uneven floor surface
8. In addition to a visual check of the evaluation area, a verification test drag is required prior to each evaluation session using a Heys xScale Luggage Scale.

Scale

9. The Heys xScale Luggage Scale.

Calibration

10. Verify that the Heys xScale Luggage Scale is in good condition and accurately measures the weight of a 20 kg sandbag (compare values with calibrated weighing scales).
11. Connect sandbags weighing 20 kg (+/- 0.2 kg) as shown in Figure 1 below.



Figure 1: Sandbags

12. Hook the Heys xScale to the red straps that connect the sandbags and drag **SLOWLY** until a stable reading is obtained. Ideally, the Heys xScale will beep once a stable signal has been detected. Measurements should be recorded while the Heys xScale is held at 1 m from the ground.

13. Figure 2 below shows how to hold the Heys xScale. The two-handed method is preferred to minimize interference with the chain and sensor.



Figure 2: Technique for holding the scale

14. To accurately replicate the minimum drag force required for a valid FORCE Evaluation, the Heys xScale screen should read 33.6 kg (+/- 1 kg).

Record Keeping

15. Keep a record of all surfaces used for official FORCE Evaluations and any ongoing adjustments required using [Tool 5: Calibration Log](#).