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Snook Tables

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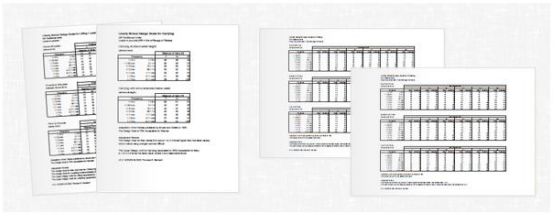
When to Use the Snook Tables

When To Use It

- When a task has been flagged by the Job Screen
- Manual handling tasks: Lifting/lowering, carrying, pushing/pulling

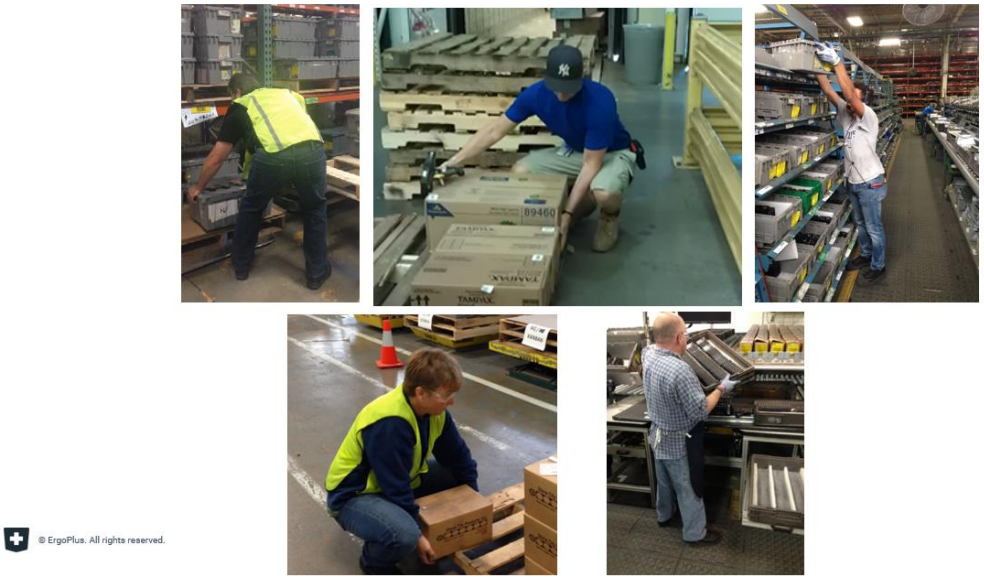


The Liberty Mutual MMH Tables, commonly known as “Snook Tables”, outline maximum acceptable weights and forces for the design of various manual material handling tasks. The Snook Tables are based on research by Dr. Stover Snook and Dr. Vincent Ciriello at the Liberty Mutual Research Institute for Safety. The tables provide design goals, in pounds of weight or force, that are deemed to be acceptable to a defined percentage of the population. This is done by comparing data for each of the specific manual handling tasks against the appropriate table.

The calculators that we use in this webinar are designed from an adaptation of the Snook Tables by Thomas E. Bernard of the University of South Florida, with support from the OSHA Salt Lake Technical Center. This adaptation yields a design goal output for various lifting, carrying, pushing, and pulling tasks based on a criteria of 75% acceptable to female workers.

Lifting and Lowering

Lifting/Lowering



Lifting and lowering is defined as manually grasping an object of definable size and mass with two hands, and vertically moving the object upward or downward without mechanical assistance.

Adjustment Factors for Lifting/Lowering:

1) The Design Goal for Men (only) may be up to 2 times higher than the table/calculator values.

2) The Design Goal for lowering is approximately the same as Lifting.

3) The Upper Design Limit for Lifting (equivalent to 25% Acceptable for Men) is about 2.7 times the table value.

4) The Upper Design Limit for Lowering (equivalent to 25% Acceptable for Men) is about 3 times the table value.

Lifting and Lowering (continued)

Lifting/Lowering

- Vertical Location
  - Floor to Knuckle (below 29”)
  - Knuckle to Shoulder (29 - 54”)
  - Above Shoulder (above 54”)
- Frequency
  - 1 action/8 hours
  - 1 action/30 minutes
  - 1 action/5 minutes
  - 1 action/2 minutes
  - 1 action/ 1 minute
  - 1 action/14 seconds
  - 1 action/9 seconds
  - 1 action/5 seconds
- Horizontal Distance
  - 7”
  - 10”
  - 15”
- Distance of Lift
  - 10”
  - 20”
  - 30”

Lifting/Lowering Variables:

Vertical Location

- Floor to Knuckle (below 29”)
- Knuckle to Shoulder (29 - 54”)
- Above Shoulder (above 54”)

Frequency

- 1 action/8 hours
- 1 action/30 minutes
- 1 action/5 minutes
- 1 action/2 minutes
- 1 action/ 1 minute
- 1 action/14 seconds
- 1 action/9 seconds

- 1 action/5 seconds

Horizontal Distance

- 7”
- 10”
- 15”

Distance of Lift

- 10”
- 20”
- 30”

Carrying

Carrying

Carrying is defined as manually grasping an object of definable size and mass with two hands, and transporting the object horizontally from one place to another without mechanical assistance.

Adjustment Factors for Carrying:

1) The Carrying Design Goal for Men varies from 1.0 - 2.4 times higher than the table/calculator values.

2) The Upper Design Limit for Carrying (equivalent to 25% Acceptable for Men) is 1.8 to 2.6 times the table/calculator value, where 2 is a reasonable factor.

Carrying (continued)

Carrying

- Carry Point (Vertical Location)
  - Waist height (elbows bent)
  - Below Waist Height (elbows straight)
- Frequency
  - 1 action/8 hours
  - 1 action/30 minutes
  - 1 action/5 minutes
  - 1 action/2 minutes
  - 1 action/ 1 minute
  - 1 action/20 seconds
  - 1 action/10 seconds
- Carry Distance
  - 7’
  - 14’
  - 27’

Carry Point (vertical location of hands during carry)

- Waist height (elbows bent)
- Below Waist Height (elbows straight)

Frequency (select closest or most conservative value)

- 1 action/8 hours
- 1 action/30 minutes
- 1 action/5 minutes
- 1 action/2 minutes
- 1 action/ 1 minute
- 1 action/20 seconds

- 1 action/10 seconds

Carry Distance

- 7’
- 14’
- 27’

Pushing/Pulling

Pushing/Pulling

Pushing and pulling is the act of manually exerting force on an object in order to move it away from (pushing) or toward (pulling) the worker.

Adjustment Factors for Pulling:

1) The Design Goal for Men (only) may be 1.5 times higher than the table/calculator values, with variation from 1 to 2.

Pushing/Pulling (continued)

Pushing/Pulling

- Push/Pull Point (Vertical Location)
  - High (hands about 55”)
  - Middle (hands about 36”)
  - Low (hands about 24”)
- Frequency
  - 1 action/8 hours
  - 1 action/30 minutes
  - 1 action/5 minutes
  - 1 action/2 minutes
  - 1 action/1 minute
  - 1 action/30 seconds
  - 1 action/15 seconds
  - 1 action/12 seconds
  - 1 action/6 seconds
- Push/Pull Distance
  - 7’
  - 24’
  - 48’
  - 97’
  - 145’
  - 194’
- Force Measurement
  - Initial Force
  - Sustained Force

Pushing/Pulling Measurement

Pushing/Pulling Measurement

To evaluate pushing and pulling tasks with the Snook Tables, you will need to determine the force required to initiate movement of the object and the force required to sustain movement of the object. Forces to sustain movement of a load are typically less than the force required to initiate movement.

A calibrated mechanical or an electronic digital force measurement dynamometer is needed to determine the forces required for pushing and pulling tasks. When measuring initial forces for pushing and pulling, be careful to use gradual force on the dynamometer. It's easy to use more than typical force and "spike" the result by pushing or pulling suddenly on the gauge. Be sure to observe the requirements of the job task before measuring, and use the technique and pace that the workers typically use to obtain the most accurate force required by the task.

Pushing/Pulling Measurement (continued)

Pushing/Pulling Measurement

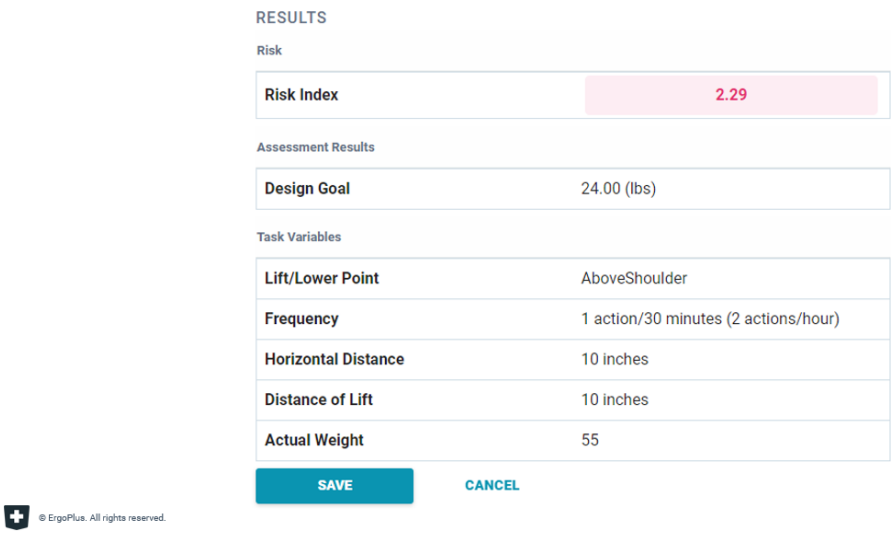
The force required may vary widely depending on the conditions. For example, uneven/cracked floor surfaces or wheels turned in the wrong direction can significantly increase force values. The goal is to try to conduct the test in all typical work conditions. If the wheels are frequently turned the wrong direction and there are cracks all over the surface of the floor, then your evaluation should certainly account for these condition.

In addition, make sure that the pushing or pulling force goes horizontally through the dynamometer. Pulling upward or pushing downward vertically on the dynamometer can

alter the results of the test. I would also recommend taking at least three measurements for each task to ensure your results are consistent.

Snook Tables Outputs

Outputs



The Snook Tables provide design goals, in pounds of weight or force, that are deemed to be acceptable to a defined percentage of the population. The Risk Index is the actual number of pounds in weight or force divided by the design goal. A Risk Index of > 1 means that the task is outside of the design goal and improvements should be made. The higher the Risk Index, the higher the risk.