

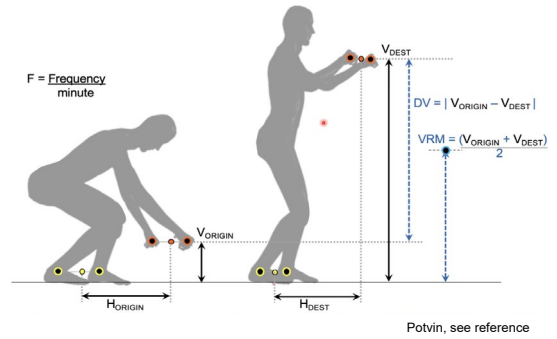


# Liberty Mutual MMH Equations Lifting & Lowering Calculator

Date: <input style="width: 90%;" type="text"/>	Task: <input style="width: 90%;" type="text"/>
Company: <input style="width: 90%;" type="text"/>	Supervisor: <input style="width: 90%;" type="text"/>
Dept: <input style="width: 90%;" type="text"/>	Evaluator: <input style="width: 90%;" type="text"/>

Action	<input style="width: 90%;" type="text"/>
Gender	Female
Desired % Capable	75.0%
Actual Load Weight (lbs)	<input style="width: 90%;" type="text"/>

	Origin	Destination	Scale Factor
Horizontal Location (H) (inches)	<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>	
Vertical Location (V) (inches)	<input style="width: 90%;" type="text"/>	<input style="width: 90%;" type="text"/>	
Vertical Range Middle (VRM) (inches)	<input style="width: 90%;" type="text"/>		
Vertical Displacement (DV) (inches)	<input style="width: 90%;" type="text"/>		
Lifting Frequency (F) (Lifts/Minute)	<input style="width: 90%;" type="text"/>		
Vertical Velocity Check (Inches/Minute)	<input style="width: 90%;" type="text"/>		
Coupling	<input style="width: 90%;" type="text"/>		



Recommended Weight Limit (RWL)  lbs

Percent Capable of Handling the Actual Weight

Notes

Note: This calculator uses the average (mean) of the 2 horizontal values (H) for calculations. An acceptable alternative method is to ONLY utilize the maximum horizontal value (H); to utilize the 'maximum' method, enter the value of the maximum H in both Horizontal Location cells.

Reference: Jim R. Potvin, Vincent M. Ciriello, Stover H. Snook, Wayne S. Maynard & George E. Brogmus (2021) The Liberty Mutual manual materials handling (LM-MMH) equations, *Ergonomics*, 64:8, 955-970, DOI: 10.1080/00140139.2021.1891297



# Liberty Mutual MMH *Equations* Pushing & Pulling Calculator

Date: <input style="width: 90%;" type="text"/>	Task: <input style="width: 90%;" type="text"/>
Company: <input style="width: 90%;" type="text"/>	Supervisor: <input style="width: 90%;" type="text"/>
Dept: <input style="width: 90%;" type="text"/>	Evaluator: <input style="width: 90%;" type="text"/>

Action

Gender

Desired % Capable

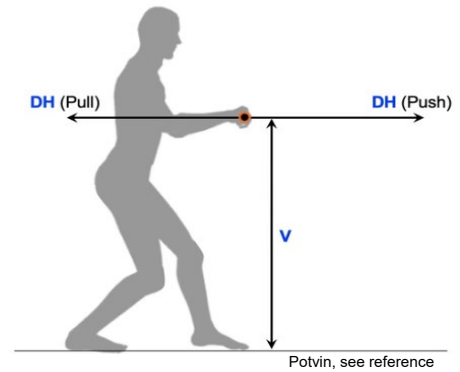
Vertical Hand Height (V) (in)

Distance (DH) (ft)

Frequency (F)  
(efforts per minute)

Horizontal Velocity Check (feet/minute)

Scale Factors	
Initial	Sustained



	Recommended Force Limit			% Capable of Actual Force
Initial Force - Actual (lbs) <input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text"/>	initial (lbs)	<input style="width: 80%;" type="text"/>	initial
Sustained Force - Actual (lbs) <input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text"/>	sustained (lbs)	<input style="width: 80%;" type="text"/>	sustained

Notes

Reference: Jim R. Potvin, Vincent M. Ciriello, Stover H. Snook, Wayne S. Maynard & George E. Brogmus (2021)  
The Liberty Mutual manual materials handling (LM-MMH) equations, *Ergonomics*, 64:8, 955-970, DOI: 10.1080/00140139.2021.1891297

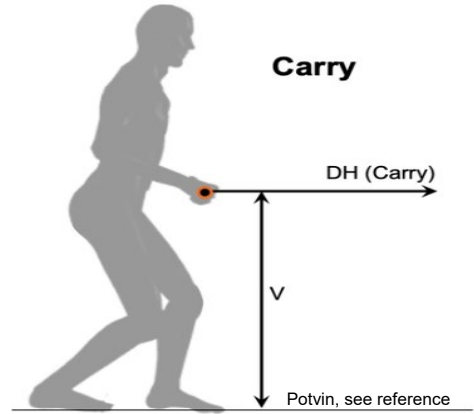


# Liberty Mutual MMH Equations Carrying Calculator

Date:	<input type="text"/>	Task:	<input type="text"/>
Company:	<input type="text"/>	Supervisor:	<input type="text"/>
Dept:	<input type="text"/>	Evaluator:	<input type="text"/>

Gender	<input type="text" value="Female"/>
Desired % Capable	<input type="text" value="75.0%"/>
Vertical Hand Height (V) (in)	<input type="text"/>
Distance (DH) (ft)	<input type="text"/>
Frequency (F) (efforts per minute)	<input type="text"/>
Horizontal Velocity Check (feet/minute)	<input type="text"/>

Scale Factors
<input type="text"/>
<input type="text"/>
<input type="text"/>
<input type="text"/>



Actual Weight Carried (lbs)	<input type="text"/>	Recommended Weight Limit	<input type="text"/>	lbs	% Capable of Actual Force	<input type="text"/>
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Notes

Reference: Jim R. Potvin, Vincent M. Ciriello, Stover H. Snook, Wayne S. Maynard & George E. Brogmus (2021)  
The Liberty Mutual manual materials handling (LM-MMH) equations, *Ergonomics*, 64:8, 955-970,  
DOI: 10.1080/00140139.2021.1891297