
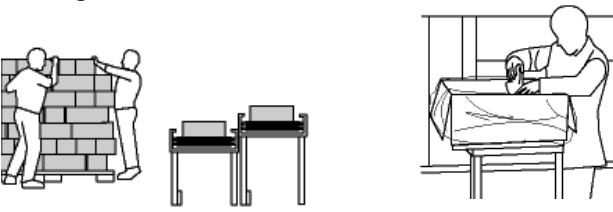

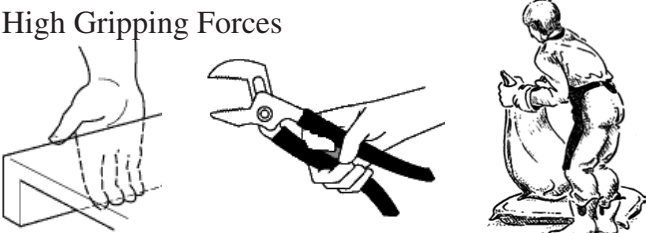
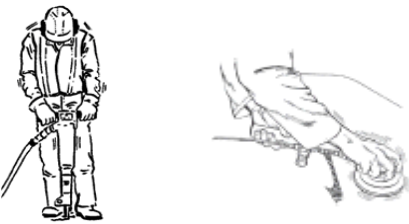










SAFETY IN MANUFACTURING

Ergonomics: Forceful Exertion

If you see risks like this in your place of work, they need to be controlled. The recommended limits are on the back.

RISK FACTORS	CONTRIBUTING FACTORS
<p>Physically Handling Loads</p> 	<p>Large and heavy load size</p> <p>Heavy tools and equipment</p> <p>No powered handling devices</p>
<p>Lifting</p> 	<p>Performing the same tasks over and over</p> <p>No manual handling devices</p> <p>Poor workstation layout</p>
<p>Unbalanced Loads or Loads With Shifting Centre of Gravity</p> 	<p>Containers partially filled with liquid</p> <p>Unevenly weighted loads</p>
<p>High Gripping Forces</p> 	<p>Non-powered hand tools</p> <p>No handles or hand-holds</p> <p>Large container size</p> <p>No manual handling devices</p>
	<p>Vibration results in higher gripping forces</p>
<p>Manually Handling Loads for Long Distances</p> 	<p>Poor workplace layout</p> <p>Difficult to use or the wrong manual handling devices</p> <p>No manual handling devices</p>

Recommended Limits

Forceful Gripping Gripping a 10 pound unsupported object should be limited to 2 hours total per shift. 	Forceful Pinching Pinching an object weighing 2 pounds should be limited 2 hours total per shift. 
High Hand-Arm Vibration Using high vibrating tools such as impact wrenches, chain saws, jack hammers, and riveting hammers should be limited to 30 minutes total per shift. 	Moderate Hand-Arm Vibration Using moderate vibrating tools such as grinders, sanders, and jigsaws should be limited to 2 hours total per shift. 
Infrequent Heavy Lifting Lifting 75 pounds or more should be limited to once per shift. 	Heavy Lifting Lifting 55 pounds should be limited to 10 lifts per shift. 
Awkward Lifting Lifting above the shoulders, below the knees or at arms length should be limited to 25 pounds, 25 times per shift. 	

Controls

Short-term injury prevention controls

1. Change the layout to reduce distances the loads are handled (for example, position raw material closer and at the same height as machinery)
2. Provide the proper manual handling devices (such as carts and dollies)
3. Maintain powered hand tools on a regular basis to reduce excessive vibration and force
4. Provide suction or vacuum grabbers to pick up and carry loads that are difficult to grasp

Long-term injury prevention controls

1. Arrange to have smaller, lighter, and easier-to-handle load sizes
2. Provide newly engineered powered hand tools that may be lighter, quieter, and/or lower vibration
3. Make sure new equipment and machinery are adjustable to allow for changing work practices and products
4. Suspend heavy frequently used tools from balancers to reduce the force required to hold the tool