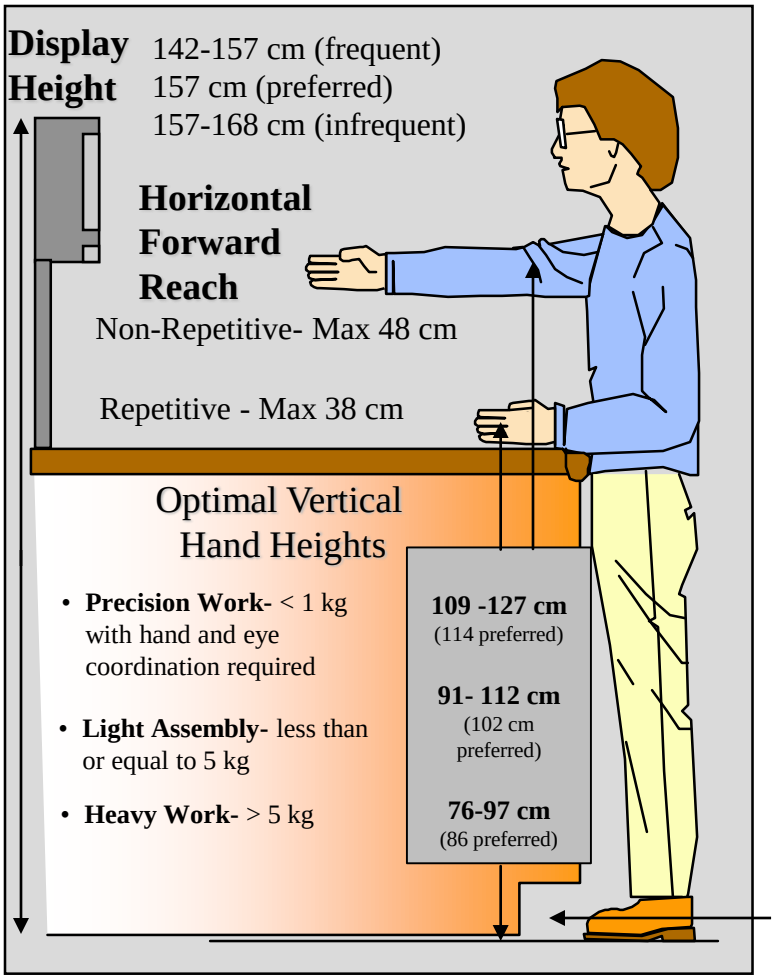
Supplement to the "DEG"

For additional ergo information, refer to the Design-In Ergonomics Guidelines SD-017 (DEG)



Reach Envelope: Horizontal reach as measured from the table front

- **Repetitive:** Cycle less than 30 seconds or if one element is repeated/sustained for more than 1/3 of cycle time.
- **Non-Repetitive:** Not repetitive

Optimal working hand height during the cycle. Consider the following contributors when determining hand height:

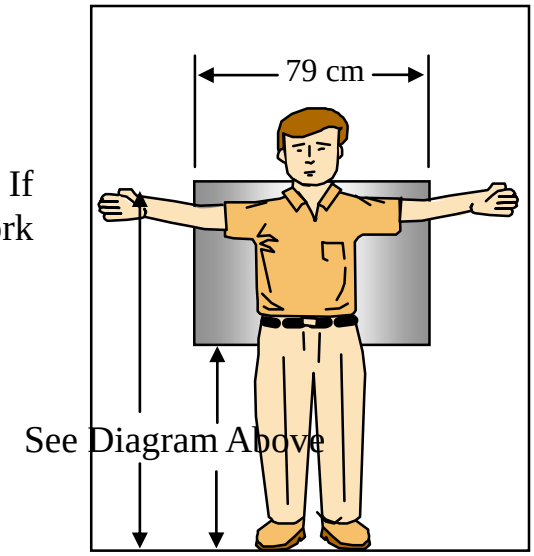
a. Floor mat thickness
b. Work surface height
c. Part/fixture height
d. Tool height
e. Part presentation
f. Part disposal
g. Force Required

Allow Toe Clearance
10 cm Minimum toe height
13 cm Minimum toe depth

•The dimensions for this workplace guideline are based on anthropometry from North Africa. If a workplace is being designed for countries outside of this region, adjustments may be required. Contact Ergonomics to determine if this is necessary.

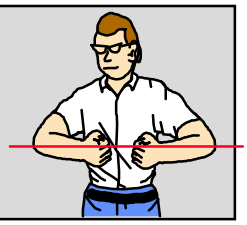
Optimal work area: If both hands are used simultaneously, all work should be performed within a 79 cm horizontal width (elbow span). If multiple part weights are being handled, all work should be between the overall optimal vertical hand height range.

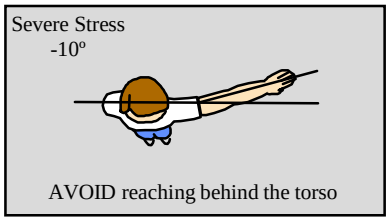
Display heights: Follow the guidelines detailed above, noting that less frequently read displays can be above or below this height range. Measurements are to the top of the display screen.



Operator Posture Limitations

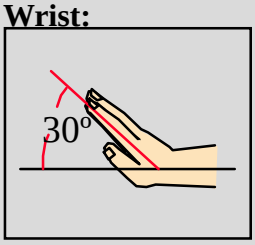
Shoulder: AVOID
- Unsupported arm or elbow
- Above mid-torso



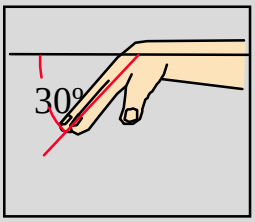


Contact Stresses: AVOID
- Hard, sharp objects pressed into palm, elbows, fingers, elbows, or forearm
- Using palm of hand as hammer

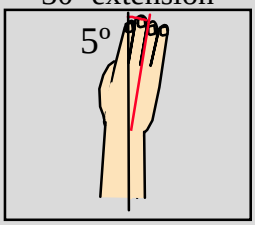
Wrist:



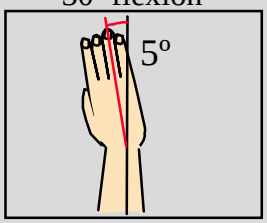
Avoid more than 30º extension



Avoid more than 30º flexion



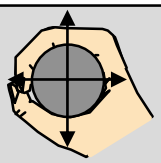
Avoid more than 5º ulnar deviation



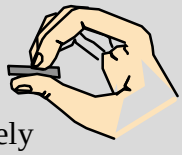
Avoid more than 5º radial deviation

Operator Force Limitations

Exert Less Than 2.7 kg Force
Using hand in a neutral position repetitively with a "power grip".



Exert Less Than 1 kg Force
Using fingers or a pinch grip (force/weight distribution concentrated on fingertips) repetitively



Ergonomics Tool kit*

Analysis Tool	Tasks Analyzed	Trigger to Use
Snook tables	Pushes, pulls, carries	> 5 kg force
1991 NIOSH Lifting Guide	Lifting	> 5 kg weight
3DSSPP or Force Exertion Tool	Push/pull, lifting	> 2.3 kg force/weight per hand
Energy expenditure	Oxygen consumption	Excessive walking and carrying
DEG (SD-017)	All	Design-in new equipment
Design-in Checklists	All	Design-in new equipment

*These tools can be found on the Nexteer Ergonomics website:
https://nexteerautomotive.sharepoint.com/sites/intranet/Ergonomics/Pages/Design-In-Tools.aspx

Questions: Please contact your ergonomics representative.

March 2020