Peripherals

Peripherals comprise a suite of products that increase productivity and protect a consumer's investment. This section covers keyboards, stands, and cases.

Keyboard

Layout. The frequency of key activation, the duration of use and relative importance of accuracy and speed should be considered when choosing the keyboard layout.

Travel. If the task is highly repetitive and has a high keystroke frequency, keyboard bounce and travel should be carefully considered.

Wrist/Palm Rest. The goals of a write/palm rest are to reduce shoulder muscle loads and promote a neutral wrist posture without negatively affecting productivity or introducing localized contact stress. Wrist/palm rests can help uses avoid localized contact stress that may be caused by the edge of a keyboard or device in the case of an integrated keyboard design as found in mobile docks and clamshell design notebooks. Wrist/palm rests are thought to promote more neutral wrist posture by reducing wrist extension. However, for some users, wrist/palm rests increase wrist discomfort, and they can potentially increase carpal tunnel pressure or cause awkward wrist positions. Although the term "wrist rest" is used as an umbrella term in the general populace, properly designed wrist rests are intended to support the palm or heel of the hand rather the actual wrist.[†]

[†] Source: Grandjean et al., 1983; Hagglund & Jacobs, 1996; Horie, Hargens & Rempel, 1993; Hunting et al., 1981; Parsons, 1991; Paul & Menon, 1994, Smith, Karsh, Conway, Cohen, James, Morgan, Sanders & Zehel, 1998.

General Keyboard Guidance

The section provides general guidelines for keyboard use:

- **Maintain neutral posture.** Devices that are used for frequent typing by two-handed typists should have a keyboard that allows the user to maintain wrist extension of less than 15 degrees and ulnar deviation of less than 15 degrees while typing.[†]
[†] Source: Bach, Honan & Rempel, 1997; Hedge, Morimoto & McCrobie, 1999.

- **Stability.** The keyboard shall be stable during normal operations (e.g. it should not slip, slide, or rock).[†]
[†] Source: ANSI, 1988

In addition, to avoid slippage during normal operations provide friction-causing material on the undersurface of the interaction device (e.g., rubber feet) and by ensuring that the interaction device has sufficient weight to obtain good friction on the work surface.

- **Keyboard finish.** Keyboard surfaces shall have matte finish.[†]
[†] Source: Ilg, 1987; NUREG 0700, 002.

The justification for a matte finish is that it minimizes reflections from ambient light sources.

- **Home row locator.** The F and J keys on the alphanumeric keyboard and the number 5 key on the numeric keypad shall have a tactile feature to assist the users in positioning their fingers on the home row of the keyboard, preferably a

small raised bar or spot on the key cap.[†]
[†] Source: Scadden & Vanderheiden, 1988

Accessories: Stands and cases

The following lists usability considerations when designing stands and cases:

- The presence of a casing relieves static loads from the arm(s) as the device is supported by the case instead of the user.
- The case should provide an improved typing experience, positioning the device at a desired angle and freeing both hands for typing.
- Make sure that the casing is comfortable to grip – focusing on removing sharp edges.
- The case supports multiple angles.

  ○ When used on the lap and the user need to see the content on the display as well as interact with the device, an angle of roughly 35 degrees is recommended.
  ○ When used on a table in a passive viewing mode, an angle of roughly 60 degrees is recommended.

- When used on a table in an active interaction mode, the recommended angle is ~35 degrees.

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