HANDLES

Flat-nose pliers with handles

Handle is a part of, or attachment to, an object that can be moved or used by hand. The design of each type of handle involves substantial ergonomic issues, even where these are dealt with intuitively or by following tradition. Handles for tools are an important part of their function, enabling the user to exploit the tools to maximum effect.

Design

The three nearly universal requirements of are:

- Sufficient strength to support the object, or to otherwise transmit the force involved in the task the handle serves.

- Sufficient length to permit the hand or hands gripping it to reliably exert that force.

- Sufficiently small circumference to permit the hand or hands to surround it far enough to grip it as solidly as needed to exert that force.

Specific needs

Other requirements may apply to specific handles:

- A sheath or coating on the handle that provides friction against the hand, reducing the gripping force needed to achieve a reliable grip.

- Designs such as recessed car-door handles, reducing the chance of accidental operation, or simply the inconvenience of snagging the handle.

- Sufficient circumference to distribute the force comfortably and safely over the hand. An example where this requirement is almost the sole purpose for a handle's existence is the handle that consists of two pieces: a hollow wooden cylinder about the diameter of a finger and a bit longer than one hand-width, and a stiff wire that passes through the center of the cylinder, has two right angles, and is shaped into a hook at each end. This handle permits comfortable carrying, with otherwise bare hands, of a heavy package, suspended on a tight string that passes around the top and bottom of it: the string is strong enough to support it, but the pressure the string would exert on fingers that grasped it directly would often be unacceptable.

- Design to thwart unwanted access, for example, by children or thieves. In these cases many of the other requirements may have reduced importance. For example, a child-proof doorknob can be difficult for even an adult to use.