Function 1—Man as Sensor

Previously, it was pointed out that one of the functions man serves in a man-machine system is that of sensor, or information seeker Contrary to the popular notion, man has something like 12 to 13 senses—not just five (Some of these are given in Fig 10–9, along with the sensing organ and physical energy of various stimuli)

As the senses are used as communications channels, they can all be used as signaling or communicating inputs, even though one generally thinks of communication only by means of sight or sound Of importance to the safety practitioner is protecting all of the operator's senses by holding energy levels within a safe range

Information displays

An information display is a device used to gather needed information and to translate such information into inputs that the human brain can perceive

Two general classes of information displays —pictorial and symbolic—are utilized

- *In pictorial displays, the geometrical* and spatial relationships are shown as they exist Maps, pictures, and TV are examples of pictorial displays

- Symbolic displays present the information in a form that has no resemblance to what it is measuring Some examples are a speedometer, a thermometer, a pressure gauge, and an altimeter

The two most common types of symbolic displays are the visual and auditory (see Fig 10–11) Much study has been given to the design characteristics of these types of displays and some general principles have emerged

Visual displays

Principles of parsimony. Visual displays are used for one of three purposes

- Quantitative readings—to determine the exact quantity involved, such as a thermometer

- Qualitative reading—to determine the state or condition at which the machine or system is functioning—usually three conditions, such as "hot," "safe," or "cold "



Fig 10–7a —Conventional pliers (top) require the wrist to be bent Redesigned tool (bottom) has contour handles, spring, and thumb stop to reduce worker fatigue



Fig 10–7b —X ray shows how contour handles fit easily into a natural hand position

Courtesy Western Electric Company, Inc

- Dichotomous (check) readings—to check operations or to identify one or two levels, such as "off" or "on "

The purpose for which the display is to be read will dictate its design But as a general principle, the simplest design is the best

Fig 10–10 shows three types of dials appropriate for the three purposes just stated The dial on the left is suitable for check readings, the one in the center, for qualitative readings, and the one on the right, for quantitative readings