

## Strategy to operate Cylindrical Interface

- Operation difference according to the size of the cylinder and that of the hand -  
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Various types of switches or levers (interfaces) are available to realize the same function such as switching the discrete status or adjusting continuous value. When people are in a hurry, they are apt to operate the given shape of interface as induced by the interface itself. Therefore the control failure occurs if the interface requires different operation from what it induces people to do, which results in serious accident. From the viewpoint of avoiding control failure based on such inconsistency, it is important to estimate human's intuitive operation of the given interface in the stage of design.

As a first step of the research, we observed how people operate different cylinders with various height and diameter (size) when they assume them as an interface "to switch discrete two statuses" or "to adjust continuous quantity." The operation difference boundaries were examined with respect to the cylinder size change and the hand characteristics in size. Five kinds of operations were observed; pushing, rotating, sliding, tilting, and pulling. (Fig.1) The boundary between the tilting operation and others was found to be related to an aspect ratio, the proportion of the diameter to the height. (Fig.2) Also the direction to approach cylinders was found to change from top to side according to the height increase and the boundary height of operation change was related to the palm width. (Fig.3)

*Keywords:* Human-Interface, Affordance, Ergonomics, Design

### References

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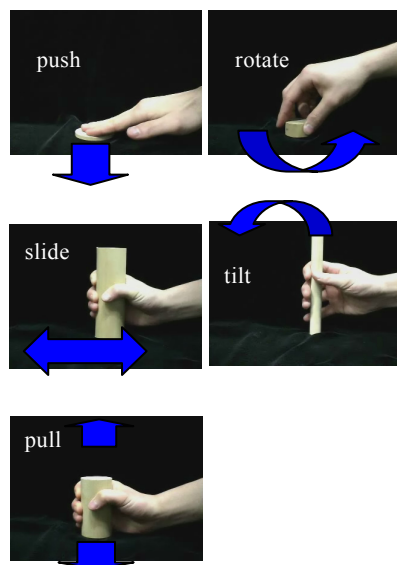


Fig.1 Various Ways to Operate Cylinder-Shaped Interface

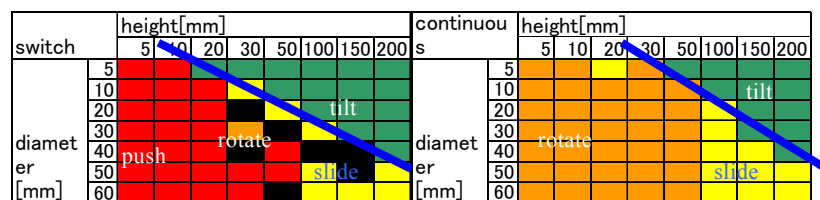


Fig.2 Boundary of the "Tilt" Operation from Others

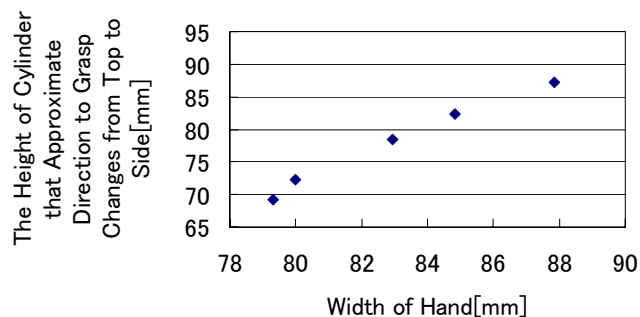


Fig.3 The Height of Cylinder that Approximate Direction to Grasp Changes from Top to Side according to the Hand Width