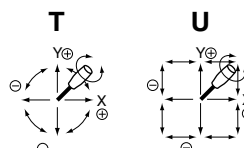


- For multi functional control with compact sized cobra shaped knob ● Potentiometer incorporated type

## ● Nomenclature

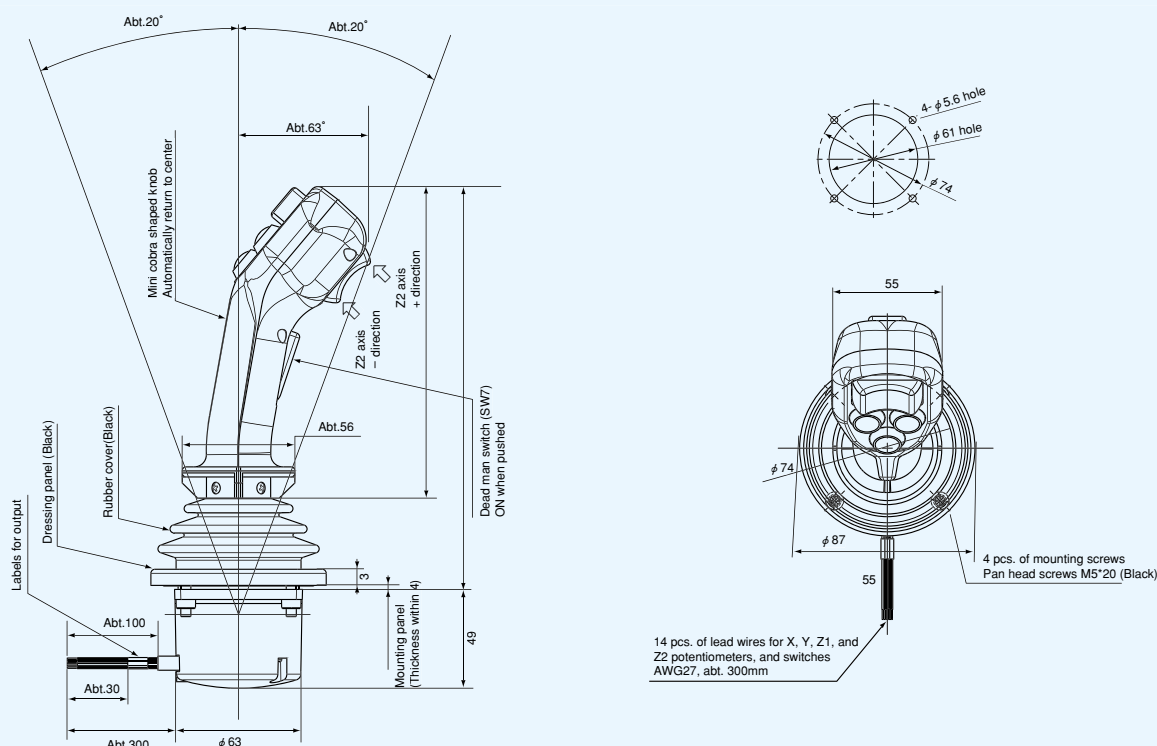
- **S** means special mechanical specifications not applicable to our standards.
- **H** means hall effect IC type resistive element incorporated.
- **MC** means with mini cobra shaped knob.
- **60** means approx. size of base housing in mm.
- **J** means joystick controller.
- **H** means kind of type.
- **K** means square shape.
- **4** means kind of mechanism: more than 4-dimensional coordinates.
- **Available directions of lever operation as below illustration**
  - U** : In addition to square-directional 360°operation, this type is 3-dimensional coordinate operation by rotating knob in which a potentiometer is incorporated.
  - T** : In addition to omni-directional 360°operation, this type is 3-dimensional coordinate operation by rotating knob in which a potentiometer is incorporated.



S H MC 60 J H K - 4 U - 4 S 4 R4 G - 00000

- Number of potentiometers to be incorporated.**  
 4...4 potentiometers incorporated. 1...1 potentiometers incorporated.  
 2...2 potentiometers incorporated. 3...3 potentiometers incorporated.
- Number of output and kind of output characteristic**  
 S...Single output X...Dal cross output P...Dual parallel output.
- Number of switches to be incorporated.**  
 4...4 switches incorporated. 5...5 switches incorporated.  
 6...6 and over 6 switches incorporated.
- With spring return device**  
 R4 : with spring return device for 2-dimensional coordinate as well as for 2 pcs.of see-saw pots.  
 R2 : with spring return device for 2-dimensional coordinate.  
 R3 : with spring return device for 2-dimensional coordinate as well as for 1 pc. of see-saw pot.
- Mounting accessories :** G: with dust proof rubber cover. P: with sub-panel for mounting
- Special part number**  
 In case we produce customized product, we add 4-digit or 5-digit branch number.

### ● Standard Dimensions





**HMC60JHK-4U-4S4R4G**  
 (Z1 and Z2 potentiometers,  
 3 pieces of push button  
 switch, and 1 dead man  
 switch on the mini cobra  
 shaped knob)

## Examples of Customized Knobs



## STANDARD SPECIFICATIONS

### Mechanical Specifications

<b>Operating force</b>	Spring return device (Automatically return to center) X & Y directions: Approx. 1.5N ~ 3N Z direction: Approx. 10mN · m ~ 25mN · m
------------------------	--

Note 1: The basement is the same as our H60JHK model. For all the specifications excluding the mechanical operating force, please refer to page 38.

Note 2: The standard H60JHK model has a Tyco connector. On the contrary, in case of H60JHK with the mini cobra knob, AWG27 lead wires (approx. 300mm long) are coming out from the joystick base in order to mount optional switches and potentiometers.

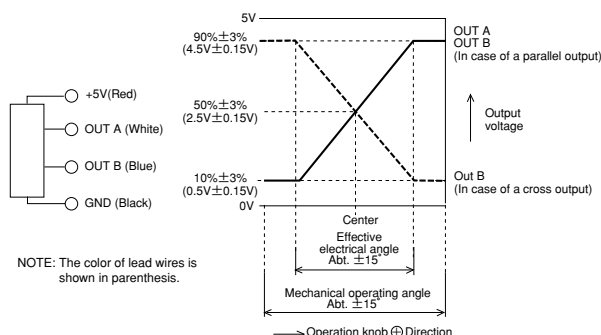
## Potentiometers & Switches Available on Mini Cobra Knob

### Specs of Z axes potentiometer

<b>Model No.</b>	SRMP12HYS (Single output) SRMP12HYP (Parallel output) SRMP12HYX (Cross output)
<b>Operating temperature range</b>	-20°C ~ +60°C
<b>Vibration</b>	10Hz ~ 55Hz 98m/s <sup>2</sup>
<b>Shock</b>	294m/s <sup>2</sup>
<b>Mechanical life expectancy</b>	Approx. 5,000,000 operations
<b>Mass</b>	Single output type: Approx. 25g Dual output type: Approx. 30g
<b>Applied voltage</b>	D. C. 5V ±10%
<b>Effective output</b>	0.5V ~ 4.5V
<b>Electrical rotating angle</b>	Approx. ±15° (Approx. 30°)
<b>Independent linearity tolerance</b>	±3%FS
<b>Load resistance</b>	Over 10kΩ
<b>Dielectric strength</b>	1 minute at A. C. 500V
<b>Insulation resistance</b>	Over 1,000MΩ at D. C. 500V

<b>EMS durability</b>	100V/m (80MHz ~ 1GHz 1kHz sine-wave 80%AM modulation)
<b>ESD durability</b>	±8kV contact ±15kV aerial discharge (Based on IEC61000-4-2)

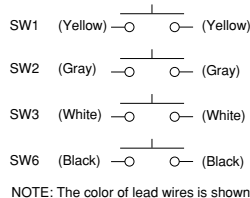
### Terminal connection diagram and output characteristics for Z-axis pot



### Specs of push button switch

<b>Model No.</b>	59-111 (Black) Manufactured by ITW Switches
<b>Operating characteristics</b>	Momentary type (SW-ON when pushed )
<b>Rating</b>	100mA , 50V D.C
<b>Dielectric strength</b>	1 minute at A. C. 1,000V
<b>Insulation resistance</b>	Over 1,000MΩ at D. C. 500V
<b>Mechanical life expectancy</b>	Max 500,000 operations

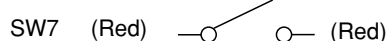
### Circuit diagram and wiring connection diagram for push button switch



### Specs of Dead man switch

<b>Model No.</b>	SPVQ810100 Manufactured by ALPS
<b>Operating characteristics</b>	Momentary type (SW-ON when pushed )
<b>Rating</b>	100mA , 12V D.C
<b>Dielectric strength</b>	1 minute at A. C. 500V
<b>Insulation resistance</b>	Over 100MΩ at D. C. 500V
<b>Mechanical life expectancy</b>	Max. 300,000 operations

### Circuit diagram and wiring connection diagram for dead man switch



### Other Notes

- The standard basement is our H60JHK model, but the mini cobra shaped knob is also mounted on (H)50JC, (H)90JA, (H)90JB models on your request.
- When the mini cobra is mounted on (H)50JC model, it should have the sub panel for mounting due to its strength.
- As an option, H25JBM model can be assembled on the mini cobra shaped knob.
- Colors of lead wires for X and Y axes potentiometers are the same as those of Z axis (shown above).
- Please see page 51, a table of Standard and Specifications Available.