

### About KSS V-Z-θ Actuators

KSS developed the compact-sized Actuator, which realized three (3) functions, linear motion (Z), rotary motion (θ) and vacuum (V) in one unit. Formerly each motions are available with separate mechanism, however this Actuator binds all the motions and helps to save space within the unit.

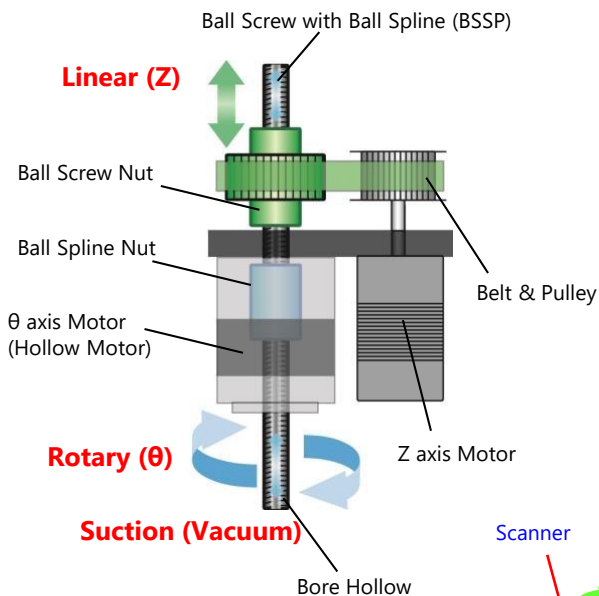


#### 【Features & Benefits】

- This whole unit binds three (3) functions into one unit, therefore complicated design is not required. This is leading to not only saving spaces, but also reducing the number of parts, assembly time and workload.
- Unit merged Hollow Motor developed with Motor manufacturer and KSS original Miniature Ball Screw with Ball Spline (BSSP), generating newly innovative technology.
- The most appropriate V-Z-θ Actuator can be selected with combination of appropriate motor.

#### 【Internal Structure】

We named this Actuator "V-Z-θ Actuator" as it contains three (3) functions of Vacuum (V), Linear motion (Z) and Theta (rotary) motion (θ). It is essential to have Hollow Motor which developed with Motor manufacturer and our Miniature Ball Screw with Ball Spline(BSSP) to realize such movement. Hollow Motor has large hollow hole to place Ball Screw Nut, and BSSP grooved spline thread overlapped the Ball Screw thread on the same Shaft by using special grinding technology. Also the Screw Shaft contains hollow hole so that it can be used for air suction function. The technology of individual component is accumulated, the V-Z-θ Actuator which cannot be imitated by other manufacturers has been realized.



#### 【How it works】

2 motors are required, which is connected to Ball Screw Nut & Ball Spline Nut. Motor can be Hollow Motor or Normal Motor connected to each Nut with Belt & Pulley. Each Motor turns, Ball Nut makes linear motion possible, Spline Nut makes rotary motion available. Bore hollow throughout Shaft can be suction function by air.

#### 【Application】

KSS V-Z-θ Actuator are used in the electrical parts Pick & Place, or Specimen examination (or Test Tube Transferring system) which are in the Medical field.

