



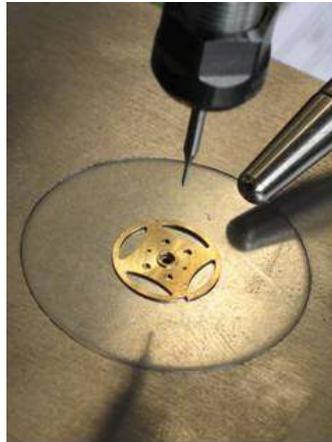
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Application Note

SMAC Moving Coil Actuators
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Automating 0.38mm diameter smart tapping for a watch manufacture.

SMAC has successfully automated a tapping process for a major watch manufacturer in Switzerland. The process has been carefully done by hand under microscope for many years. Tap diameter is 0.38mm. Part has a diameter of 3mm and is 0.25mm thick. The R&D manager at the facility says that he has been in this business for 20 years and there is no other tapping device existing in the market for this small diameter.

SMAC Linear/Rotary actuator, LAR35 series 50mm stroke is mounted vertically with shaft looking down. Custom tip is attached to the shaft end of the actuator to hold the tap.

Shape of the parts could be vary, so the customer is holding the part to tap manually for the time being while the fixture is been developed.

SMAC patented Soft-Land capability allows the tool to land on the part gently, go back 0.1mm, start the rotation, press with the linear axis with a small force, check any variation on torque on the rotary motor to avoid failure, check the linear position when the tap reaches the required position. Same procedure in reverse.

Usually tapping requires high force and torque for cutting the parts, but small hole tapping like this application needs precise force control that put out low contact force and low rotary torque. SMAC LAR series, linear and rotary are combined in one unit. With all SMAC actuators, force, speed and position are fully programmable.

SMAC Inc is the world leader in Moving Coil Actuators and associated control systems. Headquartered in Carlsbad, California USA with subsidiaries throughout the North America, Europe, Asia & Japan. SMAC delivers high tech solutions to industry with single & multi axes linear, linear/rotary actuators, integrated XY & XYZ stages, positioning stages and electronic control solutions.