

MACHINE DESIGN

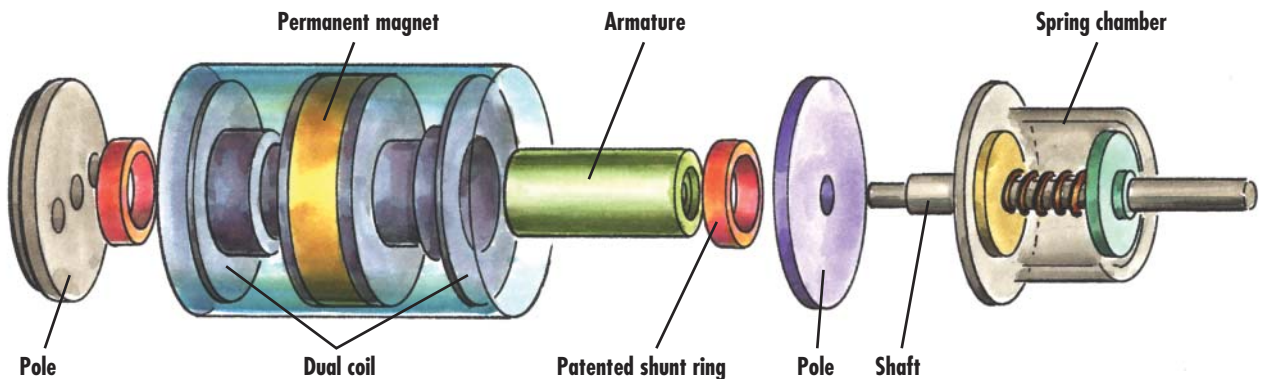
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SCANNING THE FIELD FOR IDEAS

Three-position solenoid uses just one spring



Most three-position latching solenoids have an armature that can be electromagnetically switched to any of three positions, but is held in the center position by two opposing springs even if power is lost. A new design by **TLX Technologies**, Waukesha, Wis. (tlxtech.com), uses only one spring, which expands against a hard stop to center the armature and compresses when the armature moves in either direction. This gives a tighter tolerance on the solenoid's center position and

eliminates the need to set up and adjust two springs. The solenoid also uses a shunt ring to increase pull-in force compared to traditional three-position latching solenoids. As a result, the solenoid can be smaller, given the same voltage and current requirements. The solenoid generates from 1 oz to 100 lb of force operating on 3 to 48 Vdc. Operating strokes range from 1 mm to 1 in., response time is less than 8 msec, and operating life is over a million cycles. **Circle 404**

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