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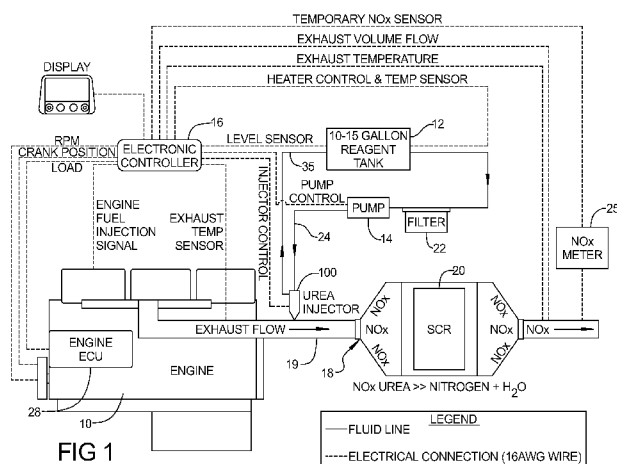
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- (54) Title:** PRESSURE SWIRL FLOW INJECTOR WITH REDUCED FLOW VARIABILITY AND RETURN FLOW



- (57) Abstract:** A reagent injector with a cartridge design has a body with a reagent inlet, outlet, and a swirl chamber, which has an exit orifice that may be covered and uncovered by a solid, movable pintle. Reagent flows through the injector when the exit orifice is covered and uncovered to cool the injector. An insulator may be disposed between the injector body and a mounting flange connectable to an exhaust system. A flow path ensures cooling of an electromagnetic actuator. Reagent may bypass an orifice swirl chamber when the pintle blocks the exit orifice. Fluid may flow between an outside diameter of a pole piece and an inside diameter of an electromagnetic actuator, through an orifice chamber and return through a central bore housing a solid pintle, around which fluid may flow. Different inner injector body passages may direct fluid into an orifice distribution chamber and out to the solid pintle.