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(21) International Application Number: PCT/US98/22824 (22) International Filing Date: 26 October 1998 (26.10.98) (30) Priority Data: 08/957,890 27 October 1997 (27.10.97) US (71) Applicant: KOHLER CO. [US/US]; 444 Highland Drive, Kohler, WI 53044 (US). (72) Inventors: PAESE, Andrew, J.; 513 Chaplin Court, Plymouth, WI 53073 (US). KARSTEN, Lee; 6928 Highway I, Random Lake, WI 53075 (US). QUELLA, John; 625 Roosevelt Road, Kohler, WI 53044 (US). WITT, Kevin; 2906 Mill Road, Sheboygan, WI 53083 (US). (74) Agent: STREIT, Richard, J.; Ladas & Parry, 244 S. Michigan Avenue, Chicago, IL 60604 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	

Published*With international search report.**Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.***(54) Title: LATCHING SOLENOID VALVE****(57) Abstract**

A pilot valve is operated by solenoid formed by a coil (52) wound around a non-magnetic spool that has a bore (56). A rare earth permanent magnet (62) is inside the bore adjacent one end and abuts a flux concentrator (58) farther inside the bore. A plunger (68) is slidably located within the bore biased away from the flux concentrator by a spring (70) and projects out another end of the bore. An enclosure of magnetic material completes a magnetic flux path around the solenoid and has an aperture through which the plunger projects. The pilot valve includes a cage (86) of rigid non-magnetic material which abuts the enclosure and has a recess which supports the plunger out of contact with the housing. The plunger selectively opens and closes a pilot tube (92) through the cage to operate a diaphragm (100) that responds by engaging a primary valve seat to control the flow of fluid through a valve body.

