



- (51) International Patent Classification: Not classified
- (21) International Application Number: PCT/EP2014/053539
- (22) International Filing Date: 24 February 2014 (24.02.2014)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 13157343.8 28 February 2013 (28.02.2013) EP
- (71) Applicant: **TA HYDRONICS S.A.** [CH/CH]; Route de Crassier 7, CH-1262 Eysins (CH).
- (72) Inventors: **VOLOVEC, Peter**; Zupelevec 58, SI-8258 Kapele (SI). **LAH, Slavko**; Marof 18, SI-8250 Brezice (SI). **BOZIC, Gregor**; Cesta 4 julija 57, SI-8270 Krsko (SI).
- (74) Agents: **LOCK, Graham James** et al.; Fry Heath & Spence LLP, The Gables, Massetts Road, Horley Surrey RH6 7D1 (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

**Published:**

- without international search report and to be republished upon receipt of that report (Rule 48.2(g))

## (54) Title: PRESSURE INDEPENDENT CONTROL AND BALANCING VALVES

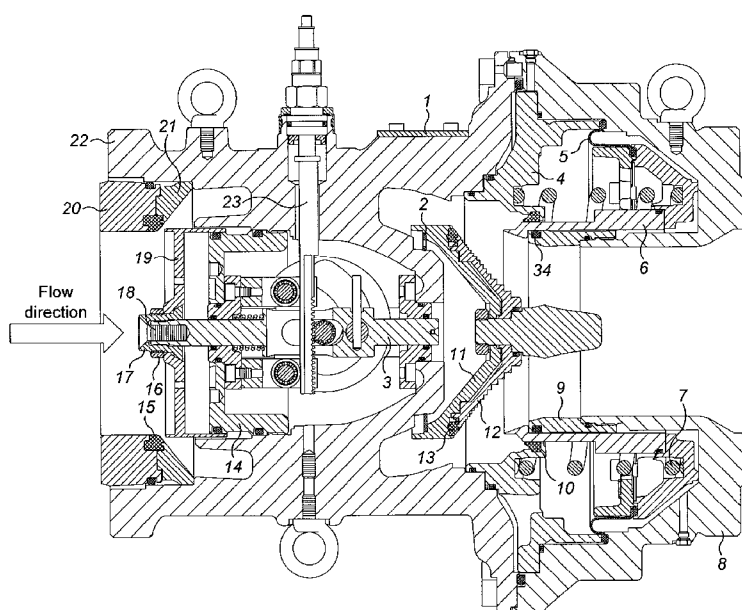


FIG. 2

(57) Abstract: A device having pressure independent control and balancing valves, suitable for use in a hydronic system, comprises a seat, a plug having an upstream surface and a downstream surface, and a piston, wherein the seat, plug and piston are aligned coaxially, a controller determines the size of a first flow restriction between the upstream surface of the plug and the seat, the piston is operable to move in response to differential pressure across the first restriction and a predetermined force, the position of the piston relative to the downstream surface of the plug determining the size of a second flow restriction thereby in use maintaining a substantially constant differential pressure across the first restriction.