

Directional Control Valve

Directional Control Valves (DCV) are used to position the control rods as a part of the BWR control rod drive system.

DCV type 2538 was designed to original specifications and fits exactly into the existing mounting configuration of the BWR Hydraulic Control Unit with no hardware modification needed.

Proven design with no reported malfunctions since initial installation in 1999. Seitz provides spare parts, replacement solenoids and maintenance services for the DCVs.



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Qualifications

Safety class	2
Seismic category	I
Electrical class	1E passive
Seismic	4.5 g; 10 – 31.5 Hz
Radiation	3×10 ³ Gy
Qualification and design bases	IEEE 323-1974; IEEE 382-1980; IEEE 344-1987; ASME III NC Edition 95; SPTE/97/004 Rev. 1; GSKL SS-001 1-3 Rev. 1
Qualified lifetime *	20 years (under normal ambient conditions)

*Maintenance

Every 10 years: It is recommended to replace all parts marked with an asterisk on the parts list in the respective repair kit
 Every 12 years: It is recommended to replace all solenoid coils that are operated with permanent energization/continuous operation

Harsh environment

Medium temperature	138°C (280.4°F)
Pressure	138 bar (2002 psig)
Ambient temperature	85°C (185°F)
Relative humidity	100%

Order information

Specifications

Valve type 2538

Operating system	Pilot operated with system media fluid
Function	2/2-way
Fluid	Demineralized water
Nominal diameter	7 mm (0.28 in)
Flow coefficient Kv (Cv) (throttle fully open)	0.48 (0.55)
Flow rate (throttle fully open)	0.48 m ³ /h (2.11 gpm)
Reverse flow differential pressure	0.45 bar (6.5 psig)
Max. differential pressure	137 bar (1987 psig)
Testing overpressure	207 bar (3002 psig)
Design temperature	138°C (280.4°F)
Open/Close time	< 50 ms/< 400 ms
Pressure range	6 to 138 bar (87 to 2002 psig)
Ambient temperature	4.4 to 49°C (40 to 120°F)
Leakage	Max. 0.12 NI/h (2 scc/min)
Weight	2.8 kg with throttle (6.2 lbs) 2.6 kg w/o throttle (5.7 lbs)
Material	Body: 316L (EN 1.4435) Elastomers: FKM
Mounting Details (SIL No. 678. Nov. 30 th 2015)	4 x cap screws with GEOMET 500 [®] coating

Solenoid type 2F25

Rated voltage	24 to 250 V AC/DC
Tolerance	+10%/-15%
Rated power	12 W/12 VA
Frequency range	48 to 62 Hz
Ingress degree	IP 55 (NEMA 3/3S)
Weight	0.510 kg (1.124 lbs)
Ambient temperature	-20 to 60°C (-4 to 140°F)

NPP references

Leibstadt	Switzerland
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Detailed dimensional drawings and 3D models are available on request, please contact us.

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