# Statement on ecological compatibility for the fields of EMC,Climate and Mechanical Stress

RE 29 055-U/09.04 1/4

**Type 4WRAE6-2X, 4WRAEB 6-2X, 4WRAE 10-2X**

Proportional directional valves with integrated electronic without closed loop position control of the spool

| Product type | Type code variations with regard to the electronics | RE sheet |
|---|---|---|
| 4WRAE 6-2X/… | 4WRAE 6…-2X/G24… | |
| 4WRAEB 6-2X/… | 4WRAEB 6…-2X/G24… | |
| 4WRAE 10-2X/… | 4WRAE 10…-2X/G24… | |

## Description of the product family

Direct operated proportional directional control valves, nominal sizes 6 and 10 without closed loop position control of the spool. The electronics for pulse width modulated control of the solenoid(s) is built into a housing on the valve.

[1] as defined by EMC law dated 30th August 1995 and Directive 89/336/EEC)

## The above mentioned products conform of the following standards:

**1. EMC (electromagnetic compatibility)**

| **prEN 50082-2:1994** | **(VDE 0839 part 82-2)** | **Field basic standard** | **Interference immunity** |
|---|---|---|---|
| prEN 61000-4-2:1994<br>IEC 1000-4-2 | VDE 0847-4-2 | ESD (electrostatic discharge) | Air discharge up to:<br>Severity grade 2 / Evaluation criteria 1<br>Severity grade 4 / Evaluation criteria 2<br>Contact discharge up to:<br>Severity grade 2 / Evaluation criteria 1<br>Severity grade 4 / Evaluation criteria 2 |
| prEN 61000-4-4:1994<br>IEC 1000-4-4 | VDE 0847-4-4 | BURST<br>(transient interference) | Power supply:<br>Severity grade 4 / Evaluation criteria 2<br>Data lines up to:<br>Data lines up to:<br>Severity grade 2 / Evaluation criteria1<br>Severity grade 4 / Evaluation criteria 2 |
| Test set-up to prEN 61000-4-2 and prEN 61000-4-4 | | | |
| **EN 50081-1:1992** | **(VDE 0839 part 81-1)** | | **Emitted interference** |
| EN 55022:1994 | VDE 0878 part 22 | | Radio interference radiation is dependent on the build-up and wiring |

If the valve is correctly connected and is wired in accordance with the RE sheet (see list above) the build-up complies with the requirements of the EMC standards EN 50081-1 and prEN 50082-2.

**2. Climate**

| **EN 60068-2** | | | **Environmental test** |
|---|---|---|---|
| EN 60068-2-1:1994 | | Cold test | 2 cycles – 25 °C, dwell time 2 hours |
| EN 60068-2-2:1993 | | Dry heat test | 2 cycles + 55 °C, dwell time 2 hours |
| EN 60068-2-1:1994<br>EN 60068-2-2:1993 | | Storage temperature | – 25 °C dwell time 16 hours<br>+ 85 °C dwell time 16 hours |
| | IEC 68-2-14:1986 | Temperature change | 2 cycles<br>– 25 °C to + 55 °C<br>Dwell time 3 hours at min./max. temperature |
| | IEC 68-2-30:1985 | Damp heat,<br>cyclical | Variant 2<br>+ 25 °C to + 40 °C<br>90% to 98% relative humidity<br>2 cycles of 24 hours (test specimen switched on 1 x and switched off 1x) |

**3. Mechanical stress**

| | | | |
|---|---|---|---|
| | | | **Vibration test** in three axes vertival to each other |
| prEN 60068-2-6:1994 | | Sine test | 10 cycles,<br>5 to 2000 to 5 Hz with logarithmic frequency change rate of 1 oct./min.<br>5 to 57 Hz, amplitude 1.5 mm (p-p)<br>57 to 2000 Hz, amplitude 10 g<br>Dwell time 20 to 30 min. at one resonance frequency |
| | IEC 68-2-36:1973 | Random test | 20 to 2000 Hz,<br>Amplitude 0.05 $g^2$ / Hz (10 g)<br>Test time 30 min. per axis |
| EN 60068-2-27:1993 | | Shock test | Half sine 15 g / 11 ms in positive/negative direction per axis,<br>18 single shocks in all |

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