In compliance with:

**CEN ISO 13849-1:2015**
Safety of machinery, safety related parts of control systems Part 1: general principles of design

**MTTFd Electrobolt Series**

B10d rating based on the calculated assumptions below is:-

= 1,000,000 cycles

Calculation data assumptions (CEN ISO 13849-1:2015, Annex C):

≡ Performance Level e (CEN ISO 13849-1. Table 2)
≡ Safety Integrity Level 3 (CEN ISO 13849-1. Table 3)
≡ MTTFd denotation HIGH (CEN ISO 13849-1. Table 4)

\[ \text{tcycle, mean time between two successive cycles} = 3600 \text{ seconds (1 cycle per hour)} \]

\[ \text{hop, mean operation in hours per day} = 1 \text{ shift x 8 hours.} \]

\[ \text{dop, mean operation in days per year} = 220 \text{ days.} \]

\[ \text{nop} = \left( \frac{\text{dop} \times \text{hop} \times 3600}{\text{tcycle}} \right) = 1760 \text{ mean annual operations} \]

\[ \text{B10d no. cycles until 10\% of components fail dangerously} = 1,000,000 \text{ cycles} \]

\[ \text{MTTFd} = \frac{\text{B10d}}{0.1 \times \text{nop}} = 5,681.82 \text{ years} \]

\[ \lambda_d = \frac{0.1 \times \text{nop}}{\text{B10d} \times 220 \times 8} = 1.00 \times 10^{-7} \text{ per operating hour} \]

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