Reliability Data for: Product series SY7700R-5NZ1-X311

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Important !

All use of the products described in this document shall comply with the currently valid technical documentation (Catalogue, Instruction Manual (IM) or Operation Manual (OM), Handling Precautions for SMC products, etc) and is under the sole risk and responsibility of the user. SMC gives no warranty, neither express nor implied, for the suitability of any component for the user's intended application.

B_{10} / B_{10D} data

Based on endurance test results and assuming a failure mode following the Weibull distribution the following B_{10} and B_{10D} data have been estimated. (90% confidence level).

Series models	B_{10}	B_{10D}	Pressure MPa
SY7700R-5NZ1-X311	10 million cycles	20 million cycles	0.7

Note) These data are correct as of 18th July 2018. SMC reserve the right to change this document without prior notice.

NOTES:

1) The estimated reliability data provided is only applicable to the component in the stated operating conditions. Other operating conditions may lead to different results.
2) The B_{10D} value is based on the provided B_{10} value using B_{10}×2 in accordance with ISO 13849.
3) The component is not a safety component as defined by Article2(c) of the Machinery Directive 2006/42/EC and is not supplied to directly provide a safety function.
4) The determination of B10 is generally based on the methods described in ISO 19973 "Pneumatic fluid power – Assessment of component reliability by testing" excluding the air pressure.

Result of reviewing the design with respect to ISO 13849-1:2015

This is a well tried component *. ☐ yes

Result of reviewing the design with respect to ISO 13849-2:2012

This component is capable of meeting the relevant basic safety principles*. ☐ yes

This component is capable of meeting the relevant basic and well-tried safety principles*. ☑ yes

Please refer to the table below.

Product	ISO 13849-2 : 2012								
	Annex A			Annex B			Annex D		
	A-1	A-2	A-3 I A-5	B-1	B-2	B-3 I B-18	D-1	D-2	D-3 I D-21
SY7700R-5NZ1-X311	●	●	-	●	●	-	●	●	-

A-1 , B-1 , D-1 : Basic safety principles

A-2 , B-2 , D-2 : Well-tried safety principles

●: reviewed

- : not reviewed

*Only when used as a component of a safety related part of a control system (SRP/CS) which is specified, designed, tested and maintained in accordance with the applicable safety requirements under the responsibility of a suitably qualified professional engineer.

Exceptions: the component does not meet the following relevant safety principles.

- Valve closed by load pressure (B-2)
- Fault avoidance in cables (conductors are not individually screened) (D-2)
- Oriented failure mode (A-2, D-2)

Note on de-energisation principle:

Energy source status	**Valve state prior to energy cut**	**Effect on spool position**
Air pressure present, electricity cut	2(B) side energised	Spool returns to the off position by spring force
	4(A) side energised	Spool held by detent force
Air pressure cut (main supply and external pilot) before electricity cut	2(B) side energised	Spool returns to the off position by spring force
	4(A) side energised	Spool held by detent force

Refer to IM No. SY7000V-SMU07 and special product drawing for details