Reliability Data for: Product series SY(3/5/7)(A,B,C)*0****-***1-**-*-X350

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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
SY3(A,B,C)*0****-***1-**-*-X350	52 million cycles	104 million cycles	0.7
SY5(A,B,C)*0****-***1-**-*-X350	25 million cycles	50 million cycles	0.7
SY7A,B,C)*0****-***1-**-*-X350	27 million cycles	54 million cycles	0.7

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
SY3000/5000/7000-X350	●	●	-	●	●	-	●	●	-

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.

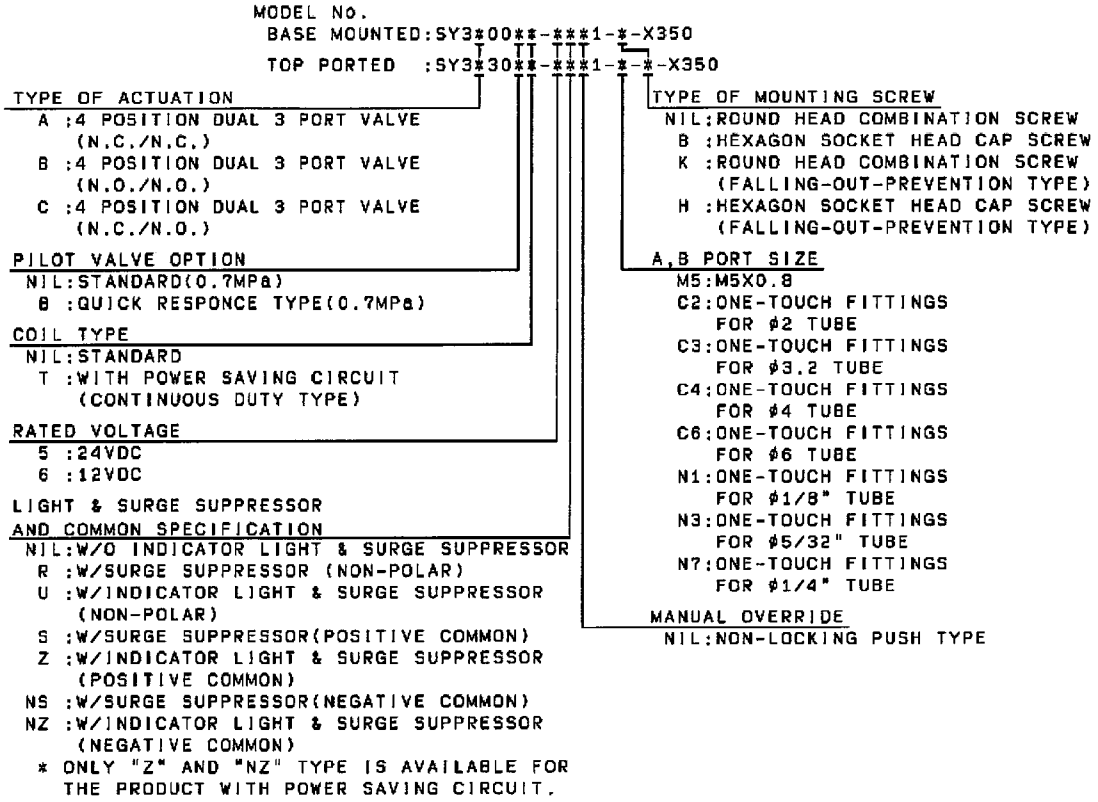
- Valve closed by load pressure (B-2)
- Fault avoidance in cables (conductors are not individually screened) (D-2)
- Oriented failure mode (A-2, D-2)

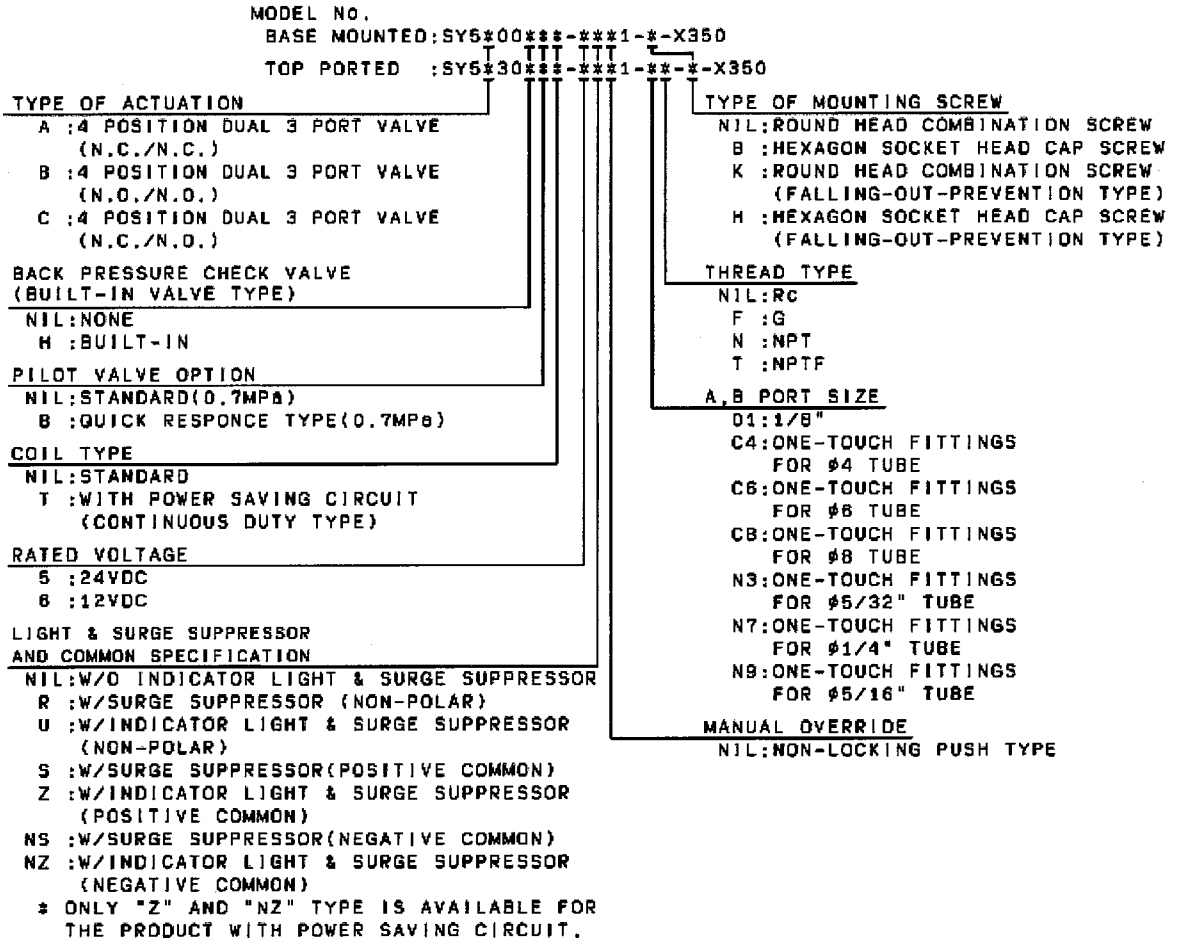
Note on de-energisation principle:

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 returns to the off position by spring 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 returns to the off position by spring force

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

Refer to the following how to order for validated products





MODEL No.
BASE MOUNTED:SY5*00R***-***1-*-X350
TOP PORTED :SY5*30R***-***1-**-*-X350

TYPE OF ACTUATION
A :4 POSITION DUAL 3 PORT VALVE (N.C./N.C.)
B :4 POSITION DUAL 3 PORT VALVE (N.O./N.O.)
C :4 POSITION DUAL 3 PORT VALVE (N.C./N.O.)

BACK PRESSURE CHECK VALVE (BUILT-IN VALVE TYPE)
NIL:NONE
H :BUILT-IN

PILOT VALVE OPTION
NIL:STANDARD(0.7MPa)
B :QUICK RESPONCE TYPE(0.7MPa)

COIL TYPE
NIL:STANDARD
T :WITH POWER SAVING CIRCUIT (CONTINUOUS DUTY TYPE)

RATED VOLTAGE
5 :24VDC
6 :12VDC

LIGHT & SURGE SUPPRESSOR AND COMMON SPECIFICATION
NIL:W/O INDICATOR LIGHT & SURGE SUPPRESSOR
R :W/SURGE SUPPRESSOR (NON-POLAR)
U :W/INDICATOR LIGHT & SURGE SUPPRESSOR (NON-POLAR)
S :W/SURGE SUPPRESSOR(POSITIVE COMMON)
Z :W/INDICATOR LIGHT & SURGE SUPPRESSOR (POSITIVE COMMON)
NS :W/SURGE SUPPRESSOR(NEGATIVE COMMON)
NZ :W/INDICATOR LIGHT & SURGE SUPPRESSOR (NEGATIVE COMMON)
* ONLY "Z" AND "NZ" TYPE IS AVAILABLE FOR THE PRODUCT WITH POWER SAVING CIRCUIT.

TYPE OF MOUNTING SCREW
NIL:ROUND HEAD COMBINATION SCREW
B :HEXAGON SOCKET HEAD CAP SCREW
K :ROUND HEAD COMBINATION SCREW (FALLING-OUT-PREVENTION TYPE)
H :HEXAGON SOCKET HEAD CAP SCREW (FALLING-OUT-PREVENTION TYPE)

THREAD TYPE
NIL:Rc
F :G
N :NPT
T :NPTF

A,B PORT SIZE
01:1/8"
C4:ONE-TOUCH FITTINGS FOR ø4 TUBE
C6:ONE-TOUCH FITTINGS FOR ø6 TUBE
C8:ONE-TOUCH FITTINGS FOR ø8 TUBE
N3:ONE-TOUCH FITTINGS FOR ø5/32" TUBE
N7:ONE-TOUCH FITTINGS FOR ø1/4" TUBE
N9:ONE-TOUCH FITTINGS FOR ø5/16" TUBE

MANUAL OVERRIDE
NIL:NON-LOCKING PUSH TYPE

MODEL No.
BASE MOUNTED:SY7*00**-***1-*-X350
TOP PORTED :SY7*30**-***1-**-*-X350

TYPE OF ACTUATION
A :4 POSITION DUAL 3 PORT VALVE (N.C./N.C.)
B :4 POSITION DUAL 3 PORT VALVE (N.O./N.O.)
C :4 POSITION DUAL 3 PORT VALVE (N.C./N.O.)

PILOT VALVE OPTION
NIL:STANDARD(0.7MPa)
B :QUICK RESPONCE TYPE(0.7MPa)

COIL TYPE
NIL:STANDARD
T :WITH POWER SAVING CIRCUIT (CONTINUOUS DUTY TYPE)

RATED VOLTAGE
5 :24VDC
6 :12VDC

LIGHT & SURGE SUPPRESSOR AND COMMON SPECIFICATION
NIL:W/O INDICATOR LIGHT & SURGE SUPPRESSOR
R :W/SURGE SUPPRESSOR (NON-POLAR)
U :W/INDICATOR LIGHT & SURGE SUPPRESSOR (NON-POLAR)
S :W/SURGE SUPPRESSOR(POSITIVE COMMON)
Z :W/INDICATOR LIGHT & SURGE SUPPRESSOR (POSITIVE COMMON)
NS :W/SURGE SUPPRESSOR(NEGATIVE COMMON)
NZ :W/INDICATOR LIGHT & SURGE SUPPRESSOR (NEGATIVE COMMON)
* ONLY "Z" AND "NZ" TYPE IS AVAILABLE FOR THE PRODUCT WITH POWER SAVING CIRCUIT.

TYPE OF MOUNTING SCREW
NIL:ROUND HEAD COMBINATION SCREW
B :HEXAGON SOCKET HEAD CAP SCREW
K :ROUND HEAD COMBINATION SCREW (FALLING-OUT-PREVENTION TYPE)
H :HEXAGON SOCKET HEAD CAP SCREW (FALLING-OUT-PREVENTION TYPE)

THREAD TYPE
NIL:Rc
F :G
N :NPT
T :NPTF

A,B PORT SIZE
02:1/4"
C6:ONE-TOUCH FITTINGS FOR ø6 TUBE
C8:ONE-TOUCH FITTINGS FOR ø8 TUBE
C10:ONE-TOUCH FITTINGS FOR ø10 TUBE
C12:ONE-TOUCH FITTINGS FOR ø12 TUBE
N7:ONE-TOUCH FITTINGS FOR ø1/4" TUBE
N9:ONE-TOUCH FITTINGS FOR ø5/16" TUBE
N11:ONE-TOUCH FITTINGS FOR ø3/8" TUBE

MANUAL OVERRIDE
NIL:NON-LOCKING PUSH TYPE