APPLICATIONS
PROCESS INDUSTRY
Product Index

Function	Δ P min. (bar)	Δ P max. (bar)	Temperature min. (°C)	Temperature max. (°C)		Pipe connections	Series	Page
BRASS BODY								
3/2 U	0	10	-50	+120	ATEX Ex d, IP66/67 IEC 61508	1/4 - 1/2	327	1
	0	10	-50	+120	IP65, IEC 61508	1/4 - 1/2	327	(1)
3/2 NC	0/2	10	-40	+60	Monostable/bistable, IP67, IEC 61508	1/4	551	(1)
5/2	0/2	10	-40	+60	Monostable/bistable, IP67, IEC 61508	1/4	551	(2)
3/2 NC - 5/2 NAMUR	0/2	10	-40	+60	Monostable/bistable, IP67, IEC 61508	1/4	551	(2)
STAINLESS STEEL BODY								
3/2 U	0	10	-50	+120	ATEX Ex d, IP66/67 IEC 61508	1/4 - 1/2	327	1
	0	10	-50	+120	IP65, IEC 61508	1/4 - 1/2	327	(1)
3/2 NC 5/2-5/3 3/2 NC - 5/2 NAMUR	0/2	10	-40	+80	Monostable/bistable, IP67, IEC 61508	1/4	551	3/2 5/2-5/3 NAMUR
			-40	+60		1/2	553	
	2	10	-40	+80	Monostable/bistable, IP65, IEC 61508	1/4	551	
			-40	+60		1/2	553	
ALUMINIUM BODY								
3/2 NC	2	10	-25	+60	Monostable/bistable, IP67, IEC 61508	1/4 - 1/2	551-553	(1)
	0/2	10	-25	+60	Monostable/bistable, IP67, IEC 61508	1/4 - 1/2	551-553	
5/2 - 5/3	2	10	-25	+60	Monostable/bistable, IP67, IEC 61508	1/4 - 1/2	551-553	(2)
	0/2	10	-25	+60	Monostable/bistable, IP67, IEC 61508	1/4 - 1/2	551-553	
3/2 NC - 5/2 - 5/3 NAMUR	2	10	-25	+60	Monostable/bistable, IP67, IEC 61508	1/4 - 1/2	551-553	(2)
	0/2	10	-25	+60	Monostable/bistable, IP67, IEC 61508	1/4 - 1/2	551-553	
3/2 NC - 5/2 NAMUR	2	8	-20	+60	Monostable/bistable, IP65	1/4	521	(2)

Solenoid Valves / Pneumatic Valves (3/2) ◀(1)
Direct or Pilot Operated Solenoid Valves / Pneumatic Valves (4/2 - 5/2 - 5/3) ◀(2)
Solenoid Valves / Pneumatic Valves (3/2) ◀(3)
Pressure Operated Valves (3/2) ◀(4)

All leaflets are available on: **www.asco.com**

Process Industry - I

Quick Selection Chart - **PROCESS INDUSTRY**

pipe connections: M5	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	Air operated version	SIL (IEC 61508)	ATEX / IECEx	body material: brass	stainless steel	aluminium	orifice size (mm)	min. operating pressure differential (bar)	max. operating pressure differential (bar): AC (~): air	AC (~): inert gases	AC (~): water	AC (~): oil	DC (=): air	DC (=): inert gases	DC (=): water	DC (=): oil	fluid temperature range (°C): min.	fluid temperature range (°C): max.	power coil (W): AC (~)	power coil (W): DC (=)	series	page
3/2 UNIVERSAL (U)																																
		3										-	4	Ex	▨	▨		5,7	0	10	10	10	10	10	10	10	-50	+120	1,85 ↓ 14,1	1,8 ↓ 14	327	1 (Ex db) + www.asco.com
		3	(3)	3								-	3	Ex	▨	▨		12	0	10	-	10	-	10	-	-	-50	+90				1 (Ex db) + www.asco.com
		3										-	4	Ex	▨	▨		5,7	0	10	10	10	10	10	10	10	-50	+120	3,7 ↓ 14,1	3,6 ↓ 14	327	(1) + www.asco.com
		3	(3)	3								-	3	Ex	▨	▨		12	0	10	-	10	-	10	-	-	-50	+90				+ www.asco.com
3/2 NORMALLY CLOSED (NC)																																
		NI										-	4	Ex		▨	▨	5,7	0	10	10	10	10	10	10	10	-50	+120	1,8 ↓ 10	1,5 ↓ 11,2	327	www.asco.com
3/2 NORMALLY CLOSED (NC), VDI/VDE 3845, for linear actuator																																
		⊥										-	4	Ex		▨	▨	5,7	0	10	10	10	10	10	10	10	-50	+120	1,8 ↓ 10	1,5 ↓ 11,2	327	www.asco.com
3/2 UNIVERSAL, MANUAL RESET CONSTRUCTION																																
		3										-	4	Ex		▨	▨	5,7	0	10	10	10	10	10	10	10	-40	+120	3,7 ↓ 10	3,2 ↓ 11,2	327	www.asco.com
		3	(3)	3								-	-	Ex		▨	▨	12	0	10	-	10	-	10	-	-	-40	+90				+ www.asco.com
3/2 UNIVERSAL (U), REDUNDANT																																
		3										-	-	Ex		▨	▨	5,7	0	10	10	10	10	10	10	10	-50	+120	1,8 ↓ 10	1,5 ↓ 11,2	327	www.asco.com
3/2 NORMALLY CLOSED (NC) - 5/2																																
		NI										↑	4	Ex			▨	6	2 (0)	10	-	10	-	-40 (1)	+40			0,4 ↓ 10,5	0,03 ↓ 11,2	551	(2) + www.asco.com
				NI								↑	3	Ex			▨	13	2 (0)	10	-	10	-	-25	+60					553	+ www.asco.com + www.asco.com
		NI															▨	6	2	8	-	8	-	-20	+60	2,5	3	521	(2) + www.asco.com
		NI										↑	4	Ex	▨			6	2 (0)	10	-	10	-	-40	+60	1,1 ↓ 10,5	0,003 ↓ 11,2	551	(2) + www.asco.com
		NI										↑	4	Ex		▨		6	2 (0)	10	-	10	-	-40	+80	1,5 ↓ 10,5	0,4 ↓ 11,2	551	www.asco.com
				NI								↑	3	Ex		▨		13	2 (0)	10	-	10	-	-40	+60			553	+ www.asco.com
												↑	4	Ex			▨	6	2 (0)	10	-	10	-	-40 (1) -25	+40 +60	0,4 ↓ 10,5	0,03 ↓ 11,2	551	(1) (2) + www.asco.com + www.asco.com
												↑	3	Ex			▨	13	2 (0)	10	-	10	-	-25				553	+ www.asco.com + www.asco.com + www.asco.com + www.asco.com + www.asco.com
												↑	4	Ex	▨			6	2 (0)	10	-	10	-	-40	+60	1,1 ↓ 10,5	0,003 ↓ 11,2	551	(1) (2) + www.asco.com + www.asco.com
												↑	4	Ex		▨		6	2 (0)	10	-	10	-	-40	+80	1,5 ↓ 10,5	0,4 ↓ 11,2	551	www.asco.com
												↑	3	Ex		▨		13	2 (0)	10	-	10	-	-40	+60			553	+ www.asco.com + www.asco.com + www.asco.com
5/3																																
		NI										-	-	Ex			▨	6	2 (0)	10	-	10	-	-40	+40	1,1 ↓ 10,5	1,2 ↓ 11,2	551	(2) + www.asco.com
				NI								-	-	Ex			▨	13	2 (0)	10	-	10	-		+60			553	+ www.asco.com
												-	-	Ex			▨	6	2 (0)	10	-	10	-	-25	+40	1,1 ↓ 10,5	1,2 ↓ 11,2	551	(2) + www.asco.com
												-	-	Ex			▨	13	2 (0)	10	-	10	-		+60			553	+ www.asco.com
												-	-	Ex				6	2 (0)	10	-	10	-	-40	+80	1,5 ↓ 10,5	0,4 ↓ 11,2	551	www.asco.com

Solenoid Valves / Pneumatic Valves (3/2) ◀(1)
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All leaflets are available on: www.asco.com

PROCESS INDUSTRY

ASCO offers a wide range of products for the process industry such as the oil & gas, (petro)chemical, pharmaceutical, power generation, water/waste water, food and paper & pulp sectors.

Solenoid pilot valves are used to activate single-acting or double-acting pneumatic actuators operating as the driving force on process valves. Quality and reliability of the process valves are paramount for production line safety and output.

The products are often installed in environments with low or high temperatures, corrosive atmospheres, or high mechanical stress. They must be designed to provide a high level of long-term reliability under severe operating conditions.

Our catalogue “Pilot Valves and Systems for the Process Industry” details the full line of our process industry products adapted to your specific sector of activity.

You will find our complete range of solenoid valves, pressure operated valves and pneumatic components on the internet at www.asco.com.



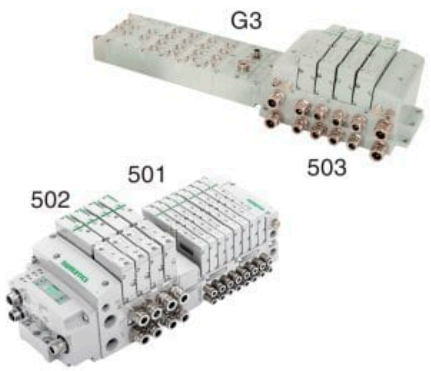

To provide you with the best solution for your application needs, ASCO offers a variety of exclusive pilot valve features including:

- Intrinsic safety
- Low power consumption
- Namur mounting pad
- Safety shutdown systems

Our low power solenoid valves are compliant with all major communication protocols such as: DeviceNet™, EtherNet/IP™, Profibus DP, PROFINET, ModbusTCP and Foundation Fieldbus

Our pilot valves are available in a large selection of versions:

- 3x2-, 4- and 5-way direct acting or pilot operated valves
- Brass, stainless steel, aluminium or plastic bodies
- Seals in a wide choice of elastomers
- Solenoid valves for use in potentially explosive atmospheres to ATEX designed to operate at temperatures from -60°C to +100°C.



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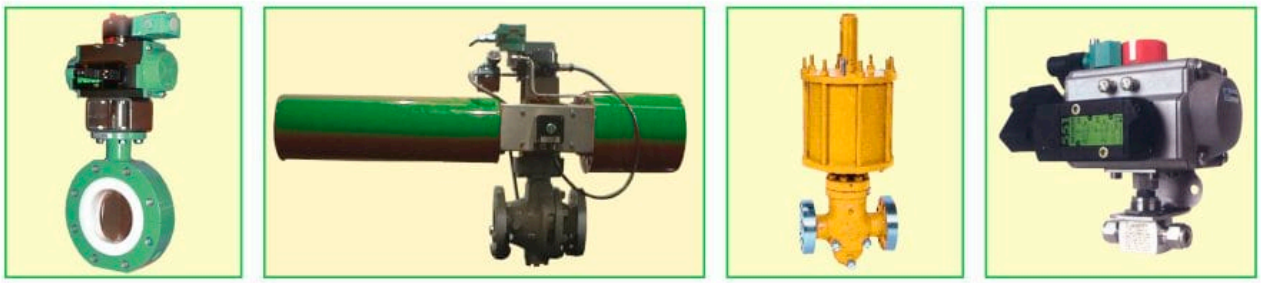
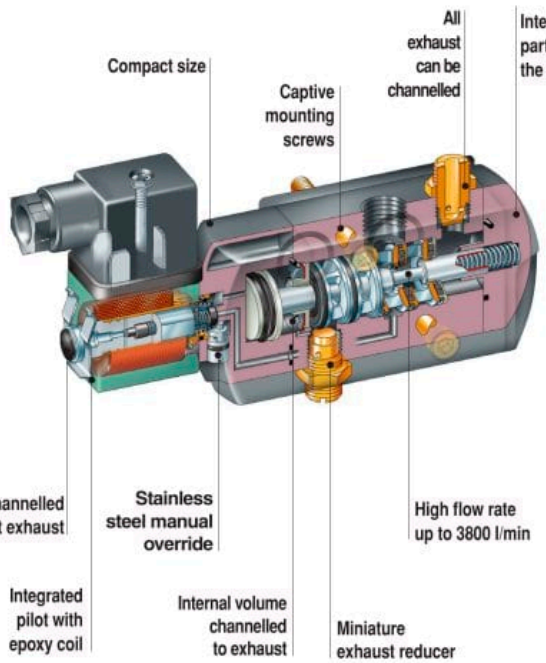
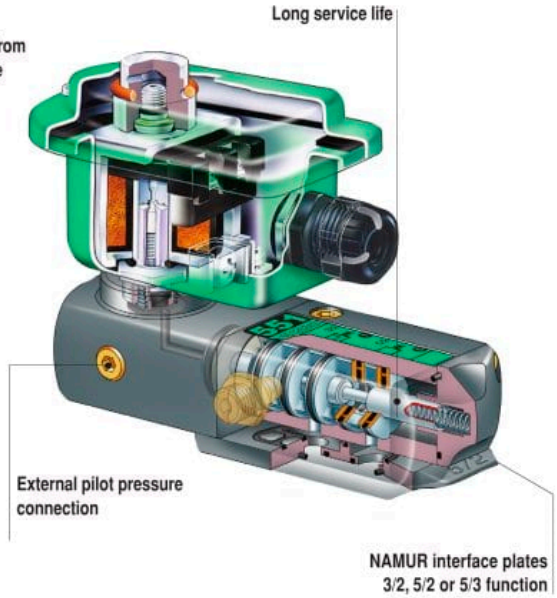
To meet both environmental standards and actuator requirements, pilot valves need to be selected with care, with reference to:

- Mounting interface
- Flow capacity
- Function
- Choice between direct-acting or pilot operated valves
- Functional safety
- Power consumption and type of electrical connection
- Communication through fieldbus and remote I/O
- Environment: Temperature, humidity, aggressive atmospheres, potentially explosive atmospheres, and protection rating

Different types of pneumatic actuators: rack & pinion, scotch yoke, linear etc.



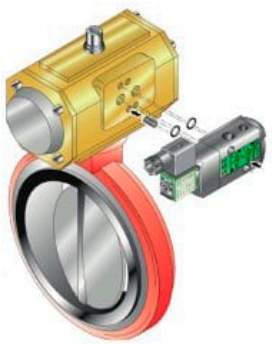




Clean/aggressive environments

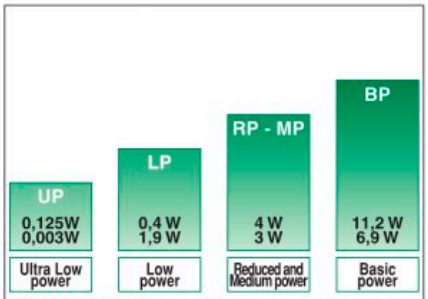
All the exhaust ports are pipable for environment protection.

The solenoid valve's internal volumes are channelled to the exhaust port to prevent the risk of corrosion in aggressive atmospheres. In NAMUR version, the spring-return chamber of the single-acting actuator "breathes" through the solenoid valve, isolating it from the outside atmosphere.



551 and 553 Series

- *A unique range of 1/4" and 1/2" pilot operated solenoid valves for your pneumatic actuator applications.*
  - *Small size and high flow rate up to 3800 l/min*
  - *NAMUR and threaded versions*
  - *Intrinsic safe version*
  - *Fieldbus compatible*
  - *Suitable for use in hazardous area zones 0, 1, 2, 20, 21, 22*
- *Wide range of pilot valves and solenoid operators, available with different power levels, valve materials, piloting interfaces and functions (3/2, 5/2, 5/3) to meet your needs for safety and low power consumption.*
- *NAMUR versions are in accordance with CEN/TC69/WG1/SG10 and VDI/VDE3845 (NAMUR).*
- *The monostable spool valves in conformity with IEC 61508 Standard (2010 route 2_H version) have TÜV (551 series) and EXIDA (551-553 series) certified with integraty levels: SIL 2 for HFT = 0 / SIL 3 for HFT = 1*
- *General characteristics (according to version):*
  - *Max. operating pressure: 10 bar*
  - *Operating temperature range: -40°C to +80°C*
  - *Flow: 700 l/min to 3800 l/min*



POWER LEVELS -
cold electrical holding values (watt)

See Quick Selection Chart

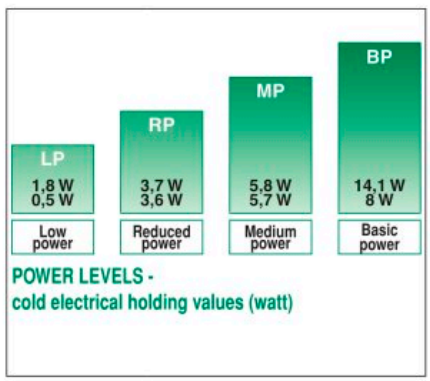
Various valve body materials

To reduce the total cost of installation, enhance the reliability of solenoid valves and make them suitable for fieldbus control, there is a strong trend towards low power design.

Large choice of solenoid operators

Series 327

- *Series 327 1/4" -1/2" direct acting solenoid valve are recommended for pilot applications with high flow, a wide pressure range and no minimum operating pressure.*
- *The balanced poppet design combines a special low friction seal with low power consumption.*
- *Functional safety levels: SIL 3, IEC 61508*
- *General characteristics (brass, aluminium or stainless steel bodies):*
  - *Orifice size = 5,7 mm (1/4), 12 mm (1/4, 1/2)*
  - *Temperature range: -60°C to +120°C*
  - *Manual Operators are optional including an under pressure removable type*
    - *Standard or tamperproof manual reset, NAMUR versions, redundant solenoid valves, for linear actuators (VDE 3845).*
- *Environmental NACE compliant and certified vibration resistant in combination with WSCR solenoids*



POWER LEVELS -
cold electrical holding values (watt)

The balanced poppet design provides a uniform pressure field around the poppet that prevents any resistance to pressure when the valve opens. The coil therefore only has to offset the friction of the seal.

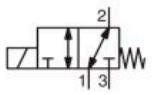
12 mm, 1/4 - 1/2 (3/8 on request)
manual reset construction

All leaflets are available on: www.asco.com

SOLENOID VALVES

direct operated, balanced poppet
high flow, flameproof enclosure
II 2 G/D Ex **db** IIC T6..T4 Gb / Ex **tb** IIIC Db IP66/67
1/4 - 1/2

U



3/2
Series
327

FEATURES

- *Solenoid valves with explosionproof operators NF or WSNF type for use in potentially explosive atmospheres according to ATEX Directive 2014/34/EU*
  EU type examination certificate no.: ***LCIE 00 ATEX 6008 X***
  IECEx Certificate of Conformity no.: ***IECEx LCI 07.0015X***
- *Compliance with the Essential Health and Safety Requirements has been assured by compliance with the International and European Standards EN-IEC 60079-0, EN-IEC 60079-1 and EN-IEC 60079-31*
- *The solenoid valves are recommended for pilot applications with high flow, wide pressure ranges and no minimum operating pressure*
- *Special execution for low ambient and fluid temperatures*
- *Manual Operators are optional including an under pressure removable type*
- *The valves are certified according to IEC 61508 Functional Safety data and have SIL-3 capability (TÜV & Exida certification)*

GENERAL

Differential pressure	0 - 10 bar [1 bar =100 kPa]
Maximum viscosity	65 cSt (mm²/s)
Response time	< 100 ms

fluids (*)		temperature range (TS)	seal materials (*)
5,7 mm	air, inert gas, water, oil	- 20°C to + 120°C	FPM (fluoroelastomer)
		- 40°C to + 40°C	VMQ (silicone)
		- 60°C to + 60°C	(F)VMQ ((fluoro)silicone)
12 mm	air, inert gas	- 25°C to + 60°C	NBR (nitrile)
		- 10°C to + 90°C	FPM (fluoroelastomer)
		- 50°C to + 60°C	(F)VMQ ((fluoro)silicone)

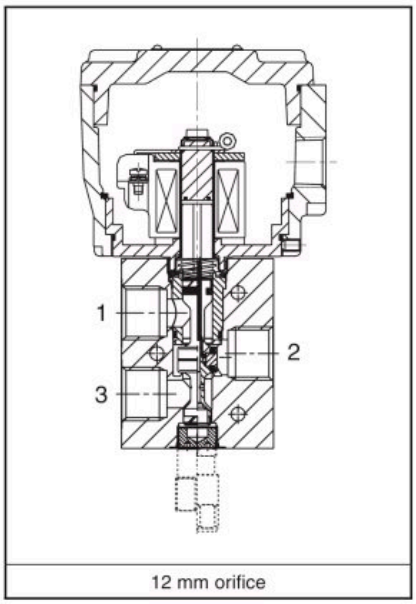
MATERIALS IN CONTACT WITH FLUID

(*) **Ensure that the compatibility of the fluids in contact with the materials is verified**

Body	Brass or stainless steel AISI 316L
Stem, core tube	Stainless steel
Core and plugnut	Stainless steel
Springs	Stainless steel
Seals & poppets	Ø 5,7 mm: FPM or VMQ or (F)VMQ Ø 12 mm: NBR or FPM or (F)VMQ
Rider ring	PTFE

OTHER MATERIALS

Solenoid enclosure	NF: Chromated aluminium, epoxy coated WSNF: Stainless steel (AISI 316L)
Bonnet, cover screws	NF: Steel (zinc plated) WSNF: Stainless steel
Core tube	Stainless steel
Core and plugnut	Stainless steel



12 mm orifice

ELECTRICAL CHARACTERISTICS

Coil insulation class	H (5,7 mm), F (12 mm)
Coil connection	Screw terminals
Electrical safety	IEC 60335-1
Standard voltages	DC (=) : 24V - 48V
(Other voltages and 60 Hz on request)	AC (~) : 24V - 48V - 115V - 230V / 50 Hz

SAFETY CODE

IECEx / Ex II 2G Ex db IIC T6..T4 Gb
IECEx / Ex II 2D Ex tb IIIC 85°C to 135°C Db IP66/67

prefix option		power ratings inrush ~ (VA)	holding ~ (VA)	holding ~ (W)	hot/cold = (W)	operator ambient temperature range (TS) (C°) [3]	replacement coil ~ 230 V/50 Hz	replacement coil = 24 V DC	type [1]
NF WSNF	5,7	10	10	10	9 / 11,2	-60 to + 40/60	400915-017	400913-142	01-02
		5,8	5,8	5,8	5,2 / 5,7	-60 to + 60/75/90	400921-297	400914-442	
		3,7	3,7	3,7	3,2 / 3,6	-60 to + 60	[2]	400914-242	
		1,85	1,85	1,85	1,5 / 1,8	-60 to + 55	[3]	400914-542	
	12	10	10	10	9 / 10	-60 to + 40/60	400921-197	400911-342	01-02
		14,1	14,1	14,1	11 / 14	-60 to + 40/60/90	400921-697	400911-642	

[1] Refer to the dimensional drawings on the following page.
[2] AC limited to 127V/50/60Hz or 125V/DC
[3] Temperature range can be limited by sealings.
[3] Only available in 24, 48 and110V/DC

operator AC (~) Pn (W)	max. ambient temp. °C surface temperature T6 85°C	T5 100°C	T4 135°C
insulation class F/H (155°C/180°C) 100% E.D.			
1,85 [4]	55	-	-
3,7 [4]	60	-	-
5,8 [4]	60	75	90
10 [4]	40	60	-
14,1	40	60	90

[4] AC rectified coil construction.

operator DC (=) Pn (W)	max. ambient temp. °C surface temperature T6 85°C	T5 100°C	T4 135°C
insulation class F/H (155°C/180°C) 100% E.D.			
1,8	55	-	-
3,6	60	-	-
5,7	60	75	90
10	40	60	-
11,2	40	60	-
14	40	60	90

ASCO™

SOLENOID VALVES SERIES 327

SPECIFICATIONS

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)					power coil (W)		catalogue number		options			
				min.	max. (PS)											
					air (*)		water (*)				brass	stainless steel	maintained man. operator [2]	impulse man. operator [2]		
NPT	(mm)	(m³/h)	(l/min)		~	=	~	=	~	=	~/=	~/=				
U - Universal, FPM seals and poppets																
1/4	5,7	0,45	7,5	0	10	10	10	10	10	11,2	NF8327B001	WSNF8327B002	MS[1]	MO	-	-
									5,8	5,7	NF8327B201	WSNF8327B202	MS[1]	MO	-	-
									3,7	3,6	NF8327B101	WSNF8327B102	MS[1]	MO	-	-
									1,85	1,8	NF8327B301	WSNF8327B302	MS[1]	MO		
	12	1,5	25	0	10	10	-	-	14,1	14	NF8327A649	WSNF8327A650	MS[1]	MO	-	-
1/2	12	1,5	25	0	10	10	-	-	14,1	14	NF8327A609	WSNF8327A610	MS[1]	MO	-	-
U - Universal, NBR seals and poppets																
1/2	12	1,5	25	0	10	10	-	-	10	10	NF8327A607	WSNF8327A608	MS[1]	MO	-	-
U - Universal, VMQ seals and poppets																
1/4	5,7	0,45	7,5	0	10	10	10	10	10	11,2	NF8327B011	WSNF8327B012	MS[1]	MO	-	-
U - Universal, (F)VMQ seals and poppets																
1/4	5,7	0,45	7,5	0	10	10	10	10	5,8	5,7	NF8327B211	WSNF8327B212	MS[1]	MO	-	-
									3,7	3,6	NF8327B111	WSNF8327B112	MS[1]	MO	-	-
									1,85	1,8	NF8327B311	WSNF8327B312	MS[1]	MO		
	12	1,5	25	0	10	10	-	-	10	10	NF8327A645	WSNF8327A646	MS[1]	MO	-	-
1/2	12	1,5	25	0	10	10	-	-	10	10	NF8327A605	WSNF8327A606	MS[1]	MO	-	-
U - Universal, (F)VMQ sealings and poppets (minimum fluid temperature -60°C)																
1/4	5,7	0,45	7,5	0	10	10	10	10	5,8	5,7	NF8327B291	WSNF8327B292	MS[1]	MO	-	-

[1] Functional Safety certification is not applicable with this feature.
[2] Under pressure removable execution

OPTIONS

- Waterproof enclosure with embedded screw terminal coil according to protection class IP67, CEE-10
- Explosionproof enclosures for use in zones 1/21-2/22, categories 2-3 to ATEX Directive 2014/34/EU (www.asco.com)
- Electrical enclosures according to "NEMA" standards are available
- Compliance with "UL", "CSA" and other local approvals available on request
- 3/8" pipe thread executions are available on request
- Stainless steel exhaust protector for valves certified to IEC 61508 Functional Safety, catalogue number: **131875-015** (NPT 1/4) or **131875-013** (NPT 1/2)
- Other pipe connections are available on request
- Any ATEX approved cable entry device can be fitted in the 1/2" NPT threaded entry hole (M20 x 1.5 in option), refer to the nameplate for identification of the maximum cable temperature
- Material certification like EN 10204 3.1 on the 316L Stainless Steel bodies are available on request

INSTALLATION

- The solenoid valves can be mounted in any position without affecting operation
- Solenoid valves have 2 or 3 mounting holes in body
- 1/2" NPT threaded cable entry. Enclosures are supplied without cable gland
- Pipe connection identifier is 8 = NPT (ANSI 1.20.3)
- Installation/maintenance instructions are included with each valve

SPARE PARTS KIT

catalogue number	spare parts kit no.
	~/=
(WS)NF8327B001/002	**C123670**
(WS)NF8327B011/012	**C131237**
(WS)NF8327B101/102/201/202	**C132251**
(WS)NF8327B111/112/211/212	**C132253**
(WS)NF8327B301/302	**C133441**
(WS)NF8327B311/312	**C133442**
(WS)NF8327A605/606/645/646	**C117638**
(WS)NF8327A607/608	**C117640**
(WS)NF8327A609/610/649/650	**C117640V**

ORDERING EXAMPLES:

NF 8 327 **B** 001 230V / 50 Hz
WSNF 8 327 **B** 202 **MS** 115V / 50 Hz
NF 8 327 **A** 607 **MO** 24V / DC
NF 8 327 **A** 606 230V / 50 Hz

prefix
pipe thread
basic number
voltage
suffix

ORDERING EXAMPLES KITS:

C123670
C131237
C117640 **V**

basic number
suffix

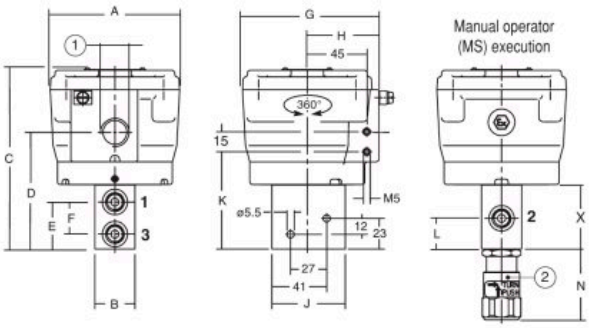
DIMENSIONS (mm), WEIGHT (kg)

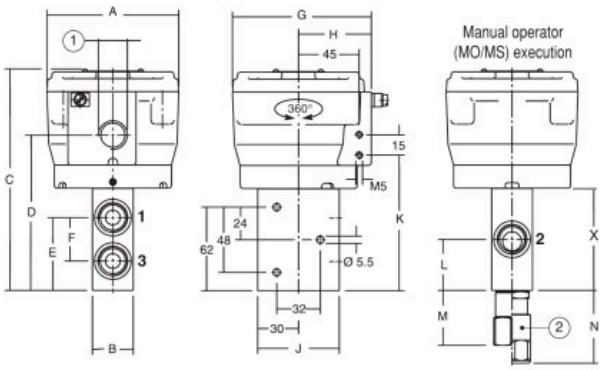
TYPE 01-02

Prefix "NF" , "WSNF" Solenoid
Aluminium, stainless steel
EN-IEC 60079-1 and EN-IEC 60079-31
II 2G Ex db IIC Gb, II 2D Ex tb IIIC Db IP66/67

Type 01:NF8327B001/011/101/111/201/211/291/301/311
Type 02:WSNF8327B002/012/102/112/202/212/292/302/312

Type 01: NF8327A605/607/609/645/649
Type 02: WSNF8327A606/608/610/646/650



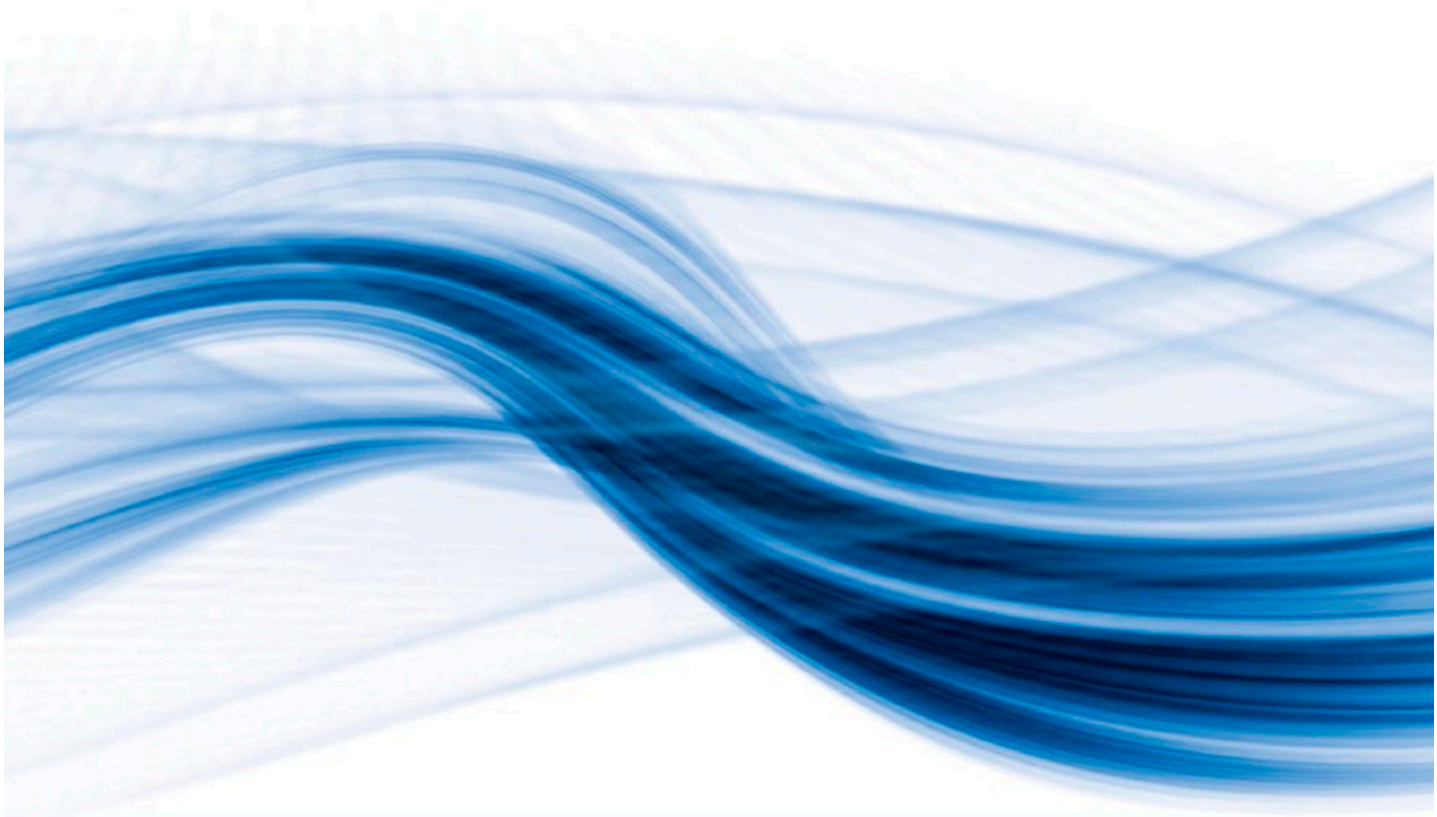


(1) 1/2 NPT
(2) Manual operator location

type	prefix option	catalogue number	A	B	C	D	E	F	G	H	J	K	L	M	N	X	weight (1)
01	NF	NF8327B001/011/101/111/201/211/291/301/311	97	30	136	87	35	24	102	54	55	73	23	-	54	48	2,6
		NF8327A605/607/609/645/649	97	30	165	115	54	32	102	54	60	100	38	40	54	76	2,4
02	WSNF	WSNF8327B002/012/102/112/202/212/292/302/312	97	30	136	87	35	24	102	54	55	73	23	-	54	48	2,6
		WSNF8327A606/608/610/646/650	97	30	165	115	54	32	102	54	60	100	38	40	54	76	3,8

(1) including coil.

Valve Actuator Controls



ASCO™

EMERSON™

Leading expertise from Emerson

- the dependable choice of engineers the world over.

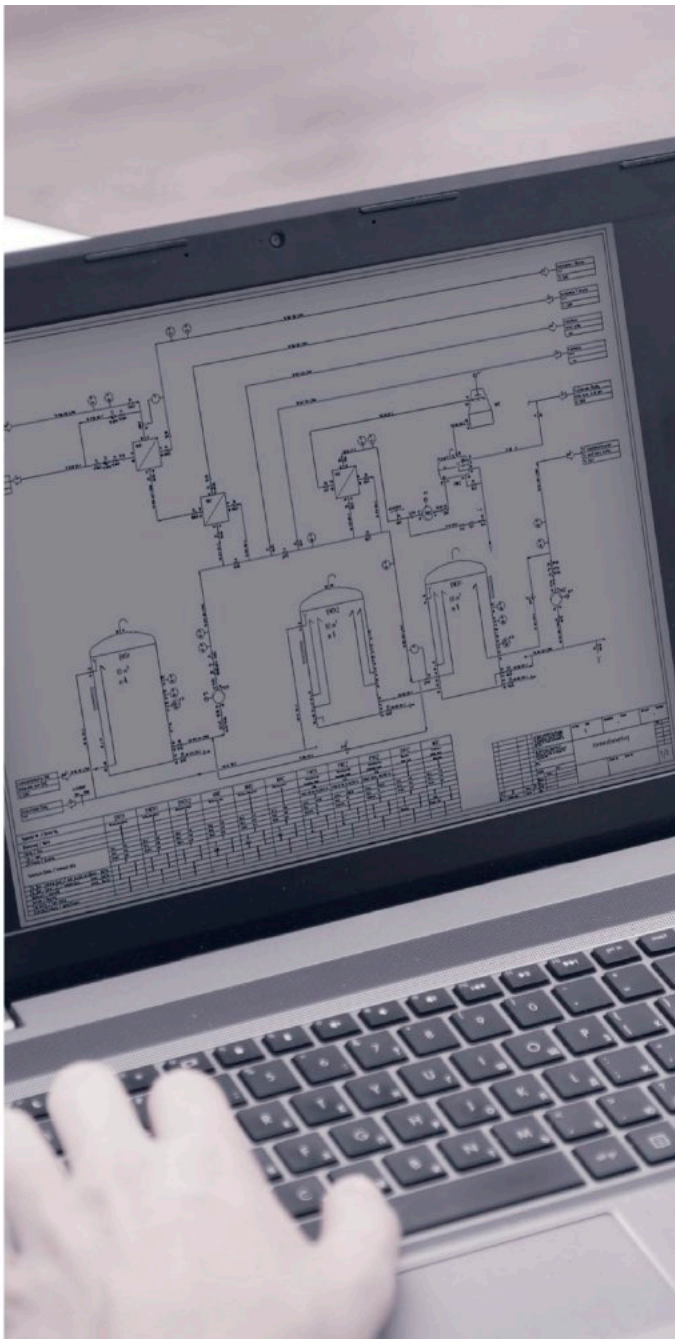
Your choice of valve actuation controls can have a considerable impact on the way you engineer a project and further down the line on plant performance, reliability and safety.

Regardless of your industry, Emerson can provide unparalleled expertise and product quality with our ASCO range of solenoid valves and associated products. We're here to solve even your most challenging engineering problems.

As developers of the first industrial solenoid valve in 1910 we have over a century of experience, we are the experts to turn to when it comes to solenoid valves for the process industry.

We work across all areas where liquids or gas processing takes place, including:

- Oil and Gas
- Petrochemical
- Pharmaceutical
- Power Generation
- Food and Beverage
- Water Treatment
- Chemistry



Our expertise... Your safety

We are dedicated to helping our customers easily meet the requirements of international functional safety standards. Our proven reliability is the reason we are the number one choice for engineers developing critical and safety related solutions.

Our SIL expertise

Emerson is proud to hold places on the IEC 61508 and IEC 61511 committees. This means that we lead the way in SIL and risk management. Key salespeople and distributor personnel are fully trained in SIL, and what it means for your business. This way, you can have complete confidence in our services and products.

Solenoid valves can easily perform millions of cycles in a lifetime – often outlasting the process valves and actuators they are installed on, with no need for maintenance. When fitted to safety shut-off valves, they may only need to operate a handful of times during their entire lifetime.

As such, it's essential that they work perfectly each and every time. Our product certification and testing means that the hard work has been done for you. The data you need for your safety calculations is readily available and you do not need to demonstrate they are proven in use.

Safe from start to finish

When you choose to work with Emerson, we'll provide you with a complete solution from start to finish. Our specialist understanding of safety loops means that we can help you design your Safety Instrumented System, whilst also supplying MTBF information and PFD values. For your convenience, you can work with a single point of contact on your entire project.

SIL products and solutions

- Direct acting Solenoid Valves (327 Series)
- Solenoid operated Spool Valves (551 Series)
- Valve Islands and associated electronics
- Redundant Control Systems
- Actuator Control Systems
- Bypass Panels

We also have certified products from Exida and Tüv which are suitable for use in safety applications up to SIL 3 with PFD < 4.10-7. These products have the highest achievable rating in accordance with IEC61508:

- 327 Series
- 551 Series

327 Series

Valve Islands

551 Series

Bypass panels

Redundancy and diagnostics

The ASCO Redundant Control System (RCS) provides inbuilt redundancy and diagnostics to optimise the safety and reliability of your plant while maximising uptime. It consolidates many components into one easy to configure, purchase and install package that meets all your safety requirements.

RCS provides higher levels of safety by incorporating a redundant, fault-tolerant architecture, high diagnostic coverage – as well as automated testing. The system's self-diagnostic capabilities test both the safety system and the emergency shutdown or process valve to ensure correct operating performance.

For those applications where automated valve testing may not be required we have the option to supply a bypass panel which enables the solenoid valve to be bypassed while its function is tested.

When it is not necessary to test the valve but it is necessary to have a redundant configuration to meet the SIL requirements we can offer Actuator Control System (ACS) containing two or more solenoid valves, solenoid valves with dual coils and separate valves which can be installed on the actuator in a redundant configuration.

RCS

ACS

Our expertise... Your productivity

We understand the importance to you and your business of keeping processes running smoothly – and we know the challenges you face.

When you choose ASCO products, you're also choosing the power of Emerson. We can offer complete actuator control, including predictive diagnostics via AMS software, to valve partial stroke testing and solenoid valve testing using Emerson digital valve controllers, providing safety measures that don't interrupt your process.

ACS

The ASCO Actuator Control System units are supplied completely assembled and tested using standard ATEX and Functional Safety certified products.

- Reduces the risk of malfunction and leakage
- Provides a flexible full 316L stainless steel modular system with:
  - Filter Regulators
  - Solenoids
  - Check valves
  - Speed controllers
  - Manual valves

Learn about our ACS capabilities with our product video

Bypass panels for solenoid testing

We offer the capability to test your solenoid valve in a safe, effective and non-disruptive way with our bypass panels.

- Won't affect or interrupt your process
- Ensures the longevity of components and functional safety
- Reduces downtime

327 Series solenoid valve

A safe and reliable product that offers the optimum balance between high flow rates and low power consumption, with proven high-cycling capabilities. With over one million 327 valves being installed in the field, this a product that has time and again proven its excellence in valve actuator applications with high flow requirements.

- Unique sealing system and non-stick design
- One of the most reliable valves of its type in aggressive atmospheres
- Reduces engineering time
- Lowers installation and commissioning costs

Find out more about 327 series at www.asco.com/en-gb/Pages/327-home.aspx

Solenoid operated spool valves

A low power and non-breathing construction offers high resistance and efficient solenoid pilot valves for harsh environments. Combined with extreme temperature capabilities (both high and low), the 551-553 valves are perfect for severe environments.

- This range is available in aluminium, brass or stainless steel
- Available with all existing protection modes and enclosures
- Suitable for explosive atmospheres
- For complex process valve actuation this solenoid valve exists in Namur or tapped connections.

Valve islands

Valve islands provide a fully integrated and complete actuator control solution.
They are ideal for high density applications where the control valves are grouped together.

- Enable digital communication with plain-language diagnostics
- Can be used in a distributed mode which puts the control close to the actuator
- Supplied ready installed in cabinets for use in aggressive environments or mounted into cabinets on site
- Can communicate via common fieldbus protocols.

Find out more about valve islands at www.asco.com/en-gb/Pages/pneumatic-valves-directional-control.aspx

Our high performance products

With our strong research and development heritage we are always pushing at the boundaries of what is possible. If you are looking for high flow rates, low power consumption or extremes of temperature the chances are that if we do not already have a product to suit we can develop one.

- Our 327 series of direct operated solenoid valves offers the lowest power level of their type
- Our Actuator Control Systems were designed with a unique coupling system that does not restrict flow
- We offer solenoid coils with a power consumption as low as 7mW enabling you to choose the right balance between power consumption and flow rate
- Our stainless steel filter regulator 342 Series offers an excellent flow rate in both high and low temperatures in a compact size

Our expertise... Your efficiency

Your design and engineering time is valuable. Let us help you make the most of it by enabling you to select from one supplier all the products you may need, backed up with the expertise you would expect from a global supplier like Emerson. Our globally certified products, broad product range and solution capabilities mean that you can work with just one supplier. From the most complex requirements of your existing systems, to meeting the requirements of strict safety directives, we can meet your unique application needs.

Production solutions for harsh environments

For harsh environment applications such as in the North Sea or in wash-down areas of food and beverage plants, we have products that will suit.

- NACE valves for upstream oil and gas, including offshore operations
- Solenoid valves in a wide variety of materials and coatings
- Stainless Steel Filter-Regulators
- Cabinet solutions including single or multiple products

Global approvals

We support a wide range of key global approvals, including:

Plus many more for local areas.

Mounting flexibility

How you mount and install our products is a choice that you make. Whether you want to use standard NAMUR interfaces, have a specially designed interface or manifold, mount the valve to the actuator with a bracket, mount the valve in the pneumatic line or mount it in a cabinet, we have products to suit.

Stainless Steel and Aluminium Filter Regulator

Bespoke solutions from a single supplier

For customers who may be tight on time or short on resources, we offer fully pre-assembled, certified, ready to install systems built to your specification. Ranging from a simple close coupled assembly of a solenoid valve and a regulator, right through to full cabinet-mounted solutions consisting of Filter regulators, valves, switching units, power supplies etc. We provide solutions for different levels of integration, from simple actuators to multifunctional cabinets.

Finding a complete solution for your business requires the careful consideration of a number of key areas, including:

- Function and environment
- Mounting interface
- Power consumption and connecting methods
- Functional safety
- Direct acting or pilot operated
- Standards and Directives
- Individual component requirements

For ease of installation and integration with your existing systems, some of our products offer standard communication protocols such as Profibus-DP, Ethernet/IP and ProfiNet. Need something else? Just ask.

Cabinet mount

Get it quicker with ASCO Express

ASCO Express guarantees short-term deliveries on several of the products featured in this brochure. Despatched same day from our European manufacturing plant, it's never been easier to get the products you need to match with your project schedule.

A service built around your business

ASCO Express is part of our dedication to providing you with the kind of service, quality and performance our customers deserve.

We currently offer two Express service levels:

- Same day: We aim to provide shipment from the production location on the day your order is received. If this is logistically impossible, we guarantee shipment in three days.
- Fast ship: guaranteed shipment within ten days of your order.

To find out more about our Express service, or to request a quote, visit us online at www.asco.com/en-gb/Pages/asco-express-services.aspx.

ASCO EXPRESS SAMEDAY FASTSHIP

Please note - actual shipment time is dependent on product and quantity ordered. Orders for the same day service must be received before 14:00 European time and are subject to a limit of 25 pieces of any product. Reasonable time must be added for transportation. For expected delivery dates of your required products, please contact your local sales office or distributor.

Why Emerson

Emerson has an established worldwide reputation for technology innovation and industry leadership. Our technologies have served to transform entire industries, from the creative solutions provided by the smallest detail, to their greater collective impact on the environments we live and work in. Helping our customers achieve that distinct competitive advantage is our priority.

Problem solving is our passion. We are committed to driving technological progress and setting the standards of the future by maintaining a strong focus on research and development, and investment in training and future talent. Our approach includes extensive research on both emerging technology and key global market trends, and our own customer challenges enable us to prioritise our R&D efforts.

Emerson. Consider it solved.

Discover more

To find out more about how our valve actuator controls can benefit your business, please visit **www.asco.com/en-gb/Pages/applications-valve-actuator-controls.aspx**, or contact your local Sales Department.

24.10.2017

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Scan to see ASCO in action
Or go to www.asco.com

Fluid Automation. Right. Now.™

ASCO™

EMERSON™

ELECTRO-PNEUMATICS AND

SAFETY OF MACHINERY

NEW MACHINERY DIRECTIVE 2006/42/EC
STANDARDS EN/IEC 62061 - EN ISO 13849-1

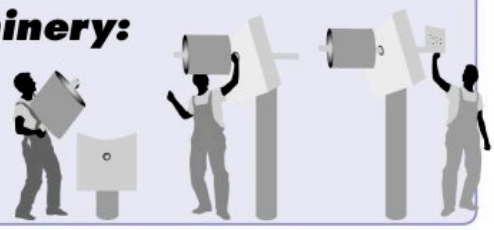
ASCO numatics™

EMERSON Industrial Automation

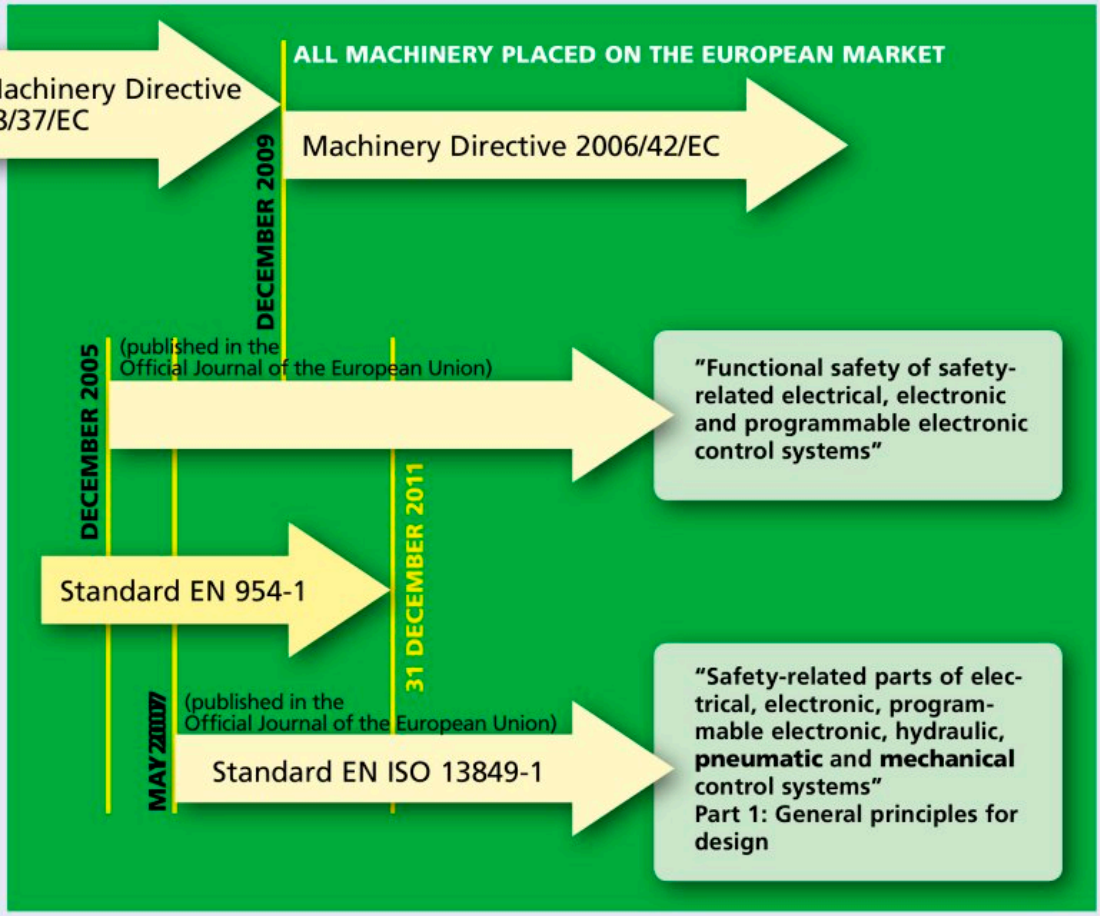
SAFETY OF MACHINERY

Principle of the safety of machinery:

To guarantee the safety and health of persons exposed to the installation, operation, adjustment and maintenance of machinery.



Development of the standards



Three key concepts for the design of machinery and their safety functions have emerged from the implementation of the new **Machinery Directive 2006/42/EC**:

- A **risk analysis** prior to design
- A particular consideration of the **quantitative aspect** of the safety functions in addition to the qualitative approach
- The use of **performance levels** (PL)

Risk evaluation:

The manufacturer or supplier of a machine must see to it that a risk evaluation is conducted to determine the health and safety requirements for persons involved in its operation. The machine must then be designed and constructed in accordance with the results of the risk evaluation.

RELIABILITY DATA

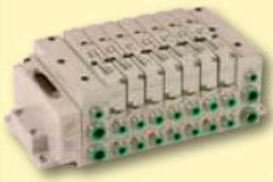
The products' reliability data (MTTF, $MTTF_d$, B_{10}, B_{10d}...) gained from reliability tests under standard conditions can be downloaded in the SISTEMA format from our website www.asconumatics.eu

Distribution function

Spool valve series 551 552-553

Stainless steel spool and sleeve valve series L1/L2

Mini-valve series 519-520-521



Valve manifold series 2005-2012 & ISO 15407-2 26mm

Valves to ISO 5599/1

Compact series

Pilot valve series 302-190-192

Series 541-542-543

Pressure switch

Air preparation

Shut-off valve and slow start-up

Regulator

Fluid control solenoid valves

Actuator control

Position detector

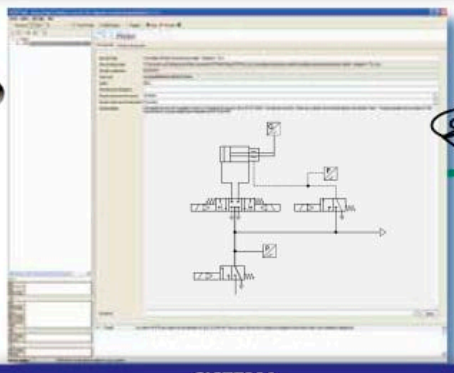
Stopper cylinder series 346 or NCPPG

Actuators (pneumatic cylinders) are not taken into consideration in the calculation of performance levels (PL). Since actuators are not an integral part of the control systems, they do not fall under EN ISO 13849-1 requirements. Manufacturers are, however, required to integrate the risks related to a failure of the actuator into their risk evaluation (EN ISO 14121 and EN ISO 12100).

Library of reliability data

ASCO numatics

Available for download at http://www.asconumatics.eu



CALCULATION → PL, SIL

SISTEMA
(Safety Integrity Software Tool for the Evaluation of Machine Applications)
SISTEMA software available for download at www.dguv.de/ifa/en

RISK EVALUATION

"Good engineering practice + probabilistic calculations"

Construction and risk evaluation of machines

EN ISO 12100
Safety of machinery
Basic concepts, general principles for design

EN 1050 (EN ISO 14121-1)
Safety of machinery
Risk assessment - Part 1: Principles

Functional and safety-relevant requirements for safety-related control systems

Functional description:

Electrical safety aspect

EN 60204-1
Safety of machinery. electrical equipment of machines - Part 1: General requirements

Design and construction of safety-related control systems for machines

EN/IEC 62061

Risk related to the hazardous event = Severity of damage S

Effects	Severity S	Class K = F + O + P				
		3-4	5-7	8-10	11-13	14-15
Death, loss of eye or arm	4	SIL 2	SIL 2	SIL 2	SIL 3	SIL 3
Permanent, loss of fingers	3			SIL 1	SIL 2	SIL 3
Reversible, medical treatment	2	Other measures			SIL 1	SIL 2
Reversible, first aid	1					SIL 1

Safety integrity levels SIL 1, 2, 3

Any architecture

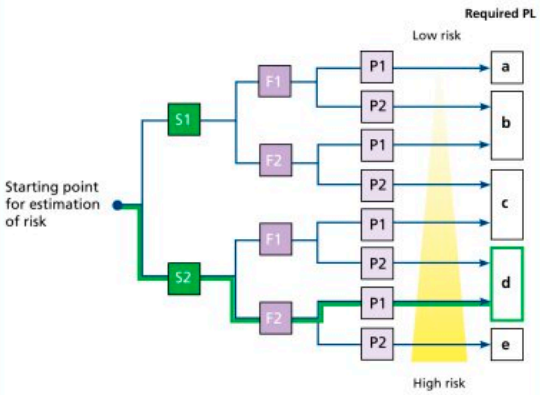
A → Series arrangement w/o diagnostic function
B → Parallel arrangement w/o diagnostic function
C → Series arrangement with diagnostic function
D → Parallel arrangement with diagnostic function

EN ISO 13849-1

et

- Frequency and/or duration of exposure F
- Probability of occurrence O
- Probability of avoidance P

→ Probability of damage



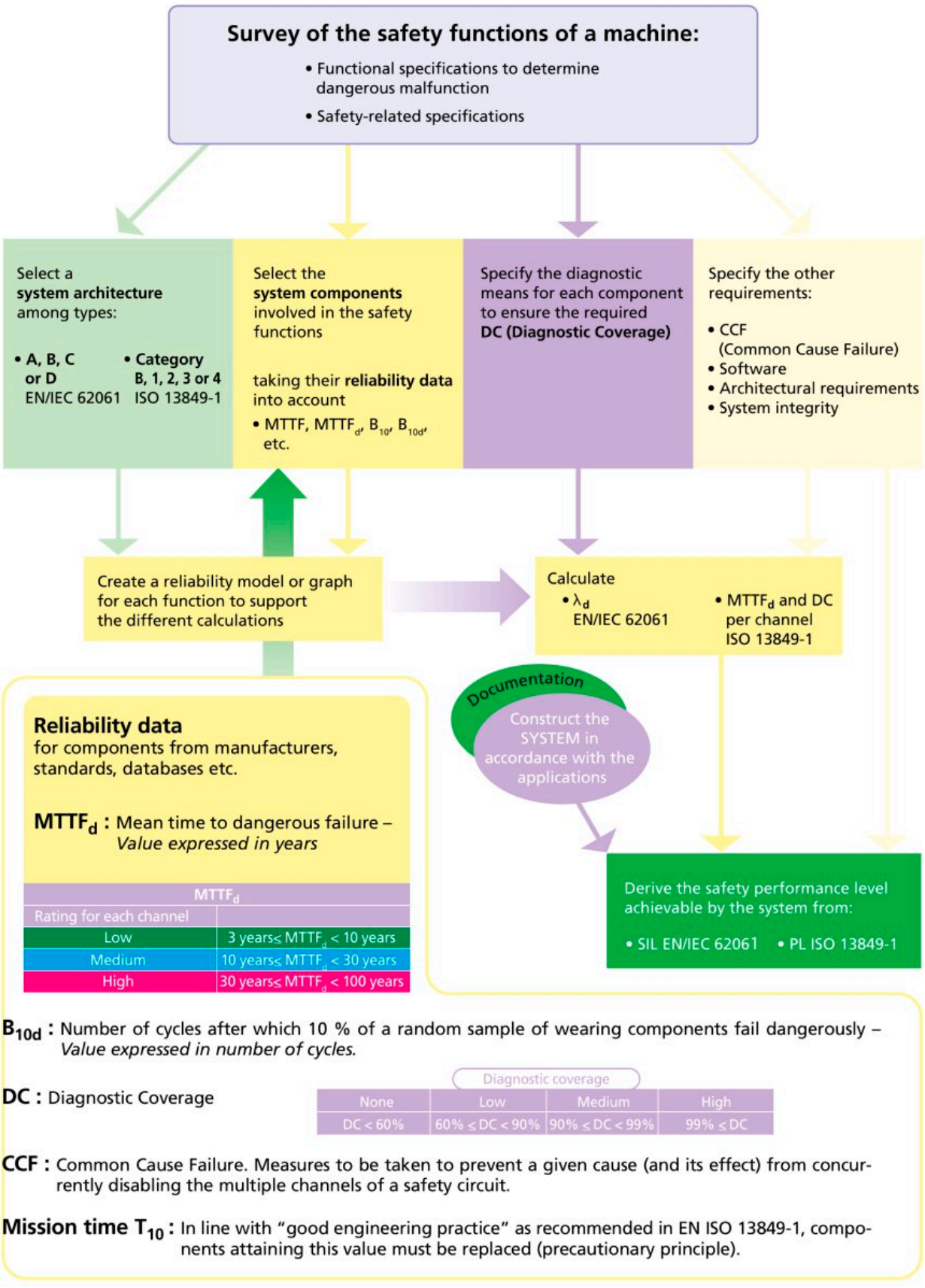
Performance levels PL a, b, c, d, e

Designated architecture (categories)

B, 1, → Series arrangement w/o diagnostic function
2 → Series arrangement with diagnostic function
3, 4 → Parallel arrangement with diagnostic function

DESIGN PROCESS

EN/IEC 62061 - EN ISO 13849-1



B_{10d} : Number of cycles after which 10 % of a random sample of wearing components fail dangerously – *Value expressed in number of cycles.*

DC : Diagnostic Coverage

Diagnostic coverage			
None	Low	Medium	High
DC < 60%	60% ≤ DC < 90%	90% ≤ DC < 99%	99% ≤ DC

CCF : Common Cause Failure. Measures to be taken to prevent a given cause (and its effect) from concurrently disabling the multiple channels of a safety circuit.

Mission time T_{10} : In line with "good engineering practice" as recommended in EN ISO 13849-1, components attaining this value must be replaced (precautionary principle).

FOR YOUR SAFETY

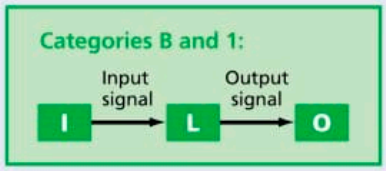
Only the pneumatic part is described in the form of a subsystem in these examples. Other safety-related components (e.g. protective devices, electrical logic elements) must be added to ensure the safety function is complete.

The examples shown here only relate to the stopping of hazardous movements. In pneumatics, safety measures concerning the interruption of energy sources, the evacuation of potential energy (pressure contained in a part of the circuit), and a "progressive" start-up after an unexpected shutdown should not be omitted.

To attain a PL = c, category 1 architecture

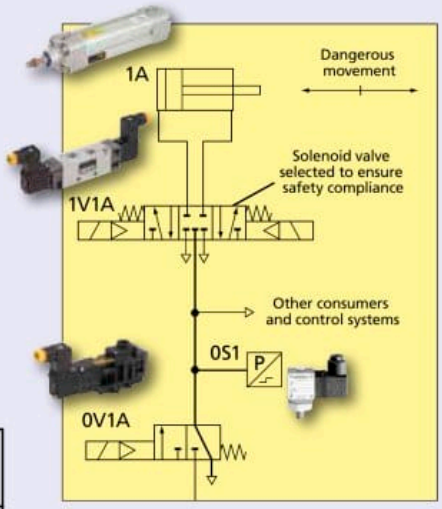
- **Safety function:** Stopping of the potentially hazardous movement of cylinder 1A.

- **Functional description:**



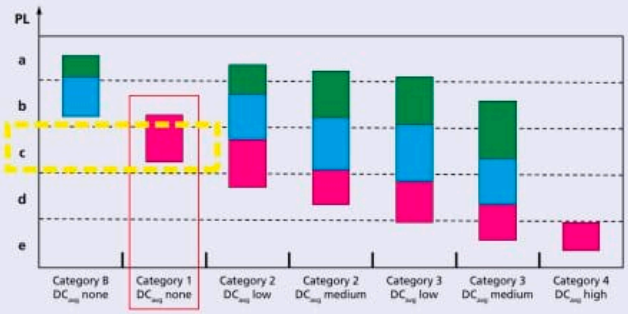
Input 'I': not represented, movable guard or light barrier, etc.

Logic element 'L': not represented, PLC



- **Calculation of the probability of dangerous failure:**

Safety function	Working hours / day	Working days / year	Cycles / year
1 cycle = 5 s	16h	240 days	2 764 800 cycles



B_{10d} (1V1A – series 520) = 130 000 000 cycles, i.e. an operating time of 47 years, $MTTF_d$=470 years "high"

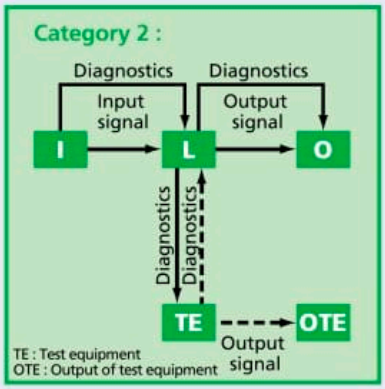
PL Performance levels
- $MTTF_d$ rating for each channel = low
- $MTTF_d$ rating for each channel = medium
- $MTTF_d$ rating for each channel = high

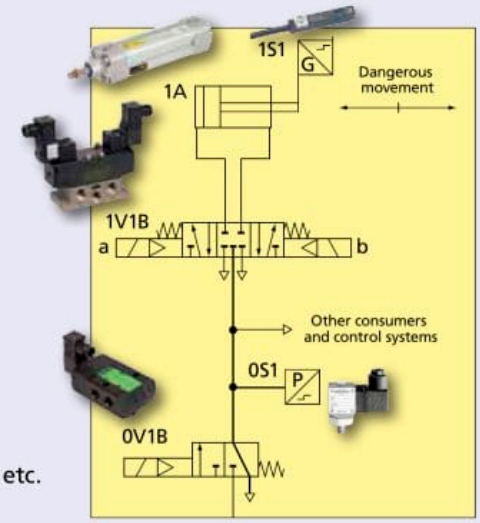
By limiting the valve's operating time to 47 years, this corresponds to a PL = c

FUNCTIONS

To attain a PL = c, category 2 architecture

- **Safety function:** Stopping of the potentially hazardous movement of cylinder 1A.
- **Functional description:**





Input 'I': not represented, movable guard or light barrier, etc.

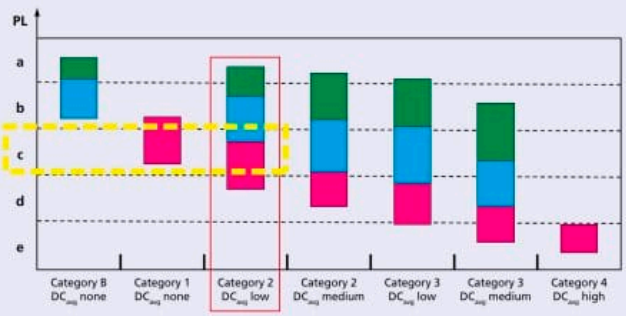
Logic element 'L': not represented, PLC

Stop of cylinder ensured by:	Diagnostics ensured by:
Output O: Valve 1V1B	Cross-monitoring in L1 of the supply status coherence of coils 1V1Ba and 1V1Bb and the limit switches 1S1

0V1: Energy isolating valve: ensures the system is exhausted in case of loop failure.

- **Calculation of the probability of dangerous failure:**

Safety function	Working hours / day	Working days / year	Cycles / year
1 cycle = 5 s	16h	240 days	2 764 800 cycles



B_{10d} (valve 1V1B - series 542) = 44 912 670 cycles, i.e. an operating time of 16.2 ans,
$MTTF_d$ = 162 years "high"

$MTTF_d$ (sensors 1S1) = 45 000 000 h, i.e. 11 718 years "high"

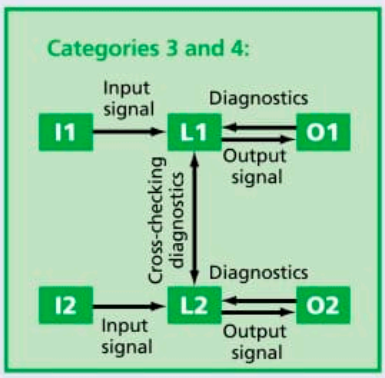
The case study shows:
DC (Diagnostic Coverage) = 60% "low".

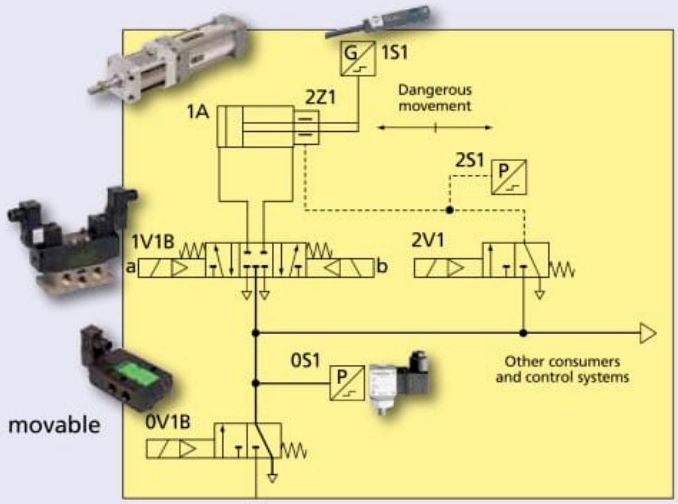
PL Performance levels
- $MTTF_d$ rating for each channel = low
- $MTTF_d$ rating for each channel = medium
- $MTTF_d$ rating for each channel = high

By limiting the valve's operating time to 16.2 years, this corresponds to a PL=c for the safety loop.

To attain a PL = d, category 3 architecture

- **Safety function:** Stopping of the potentially hazardous movement of cylinder 1A.
- **Functional description:**





Inputs 'I1' and 'I2': not represented, movable guard or light barrier, etc.
Logic elements 'L1' and 'L2': not represented, PLC

Stop of cylinder ensured by:		
Output O1: Valve 1V1B	Comparison in L1 of the supply status of coils 1V1Ba and 1V1Bb and the limit switches 1S1	Cross-monitoring of L1/L2 status coherence within the PLC
Output O2: Valve 2V1 controlling the rod lock 2Z1	Pressure switch 2S1 for transmission of signal to L2	

0V1B: Energy isolating valve: ensures the system is exhausted

- **Calculation of the probability of dangerous failure:**

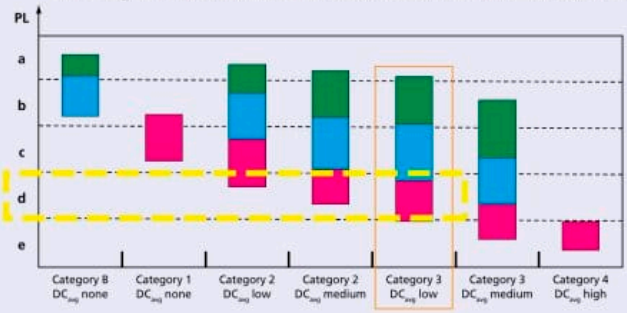
Safety function	Working hours / day	Working days / year	Cycles / year
1 cycle = 10 s	16h	240 days	1 382 400 cycles

B_{10d} (valve 1V1B - series 542) = 44 912 670 cycles, i.e. an operating time of 32.4 years, MTTFd = 324 years "high"

B_{10d} (valve 2V1 - series 520) = 20 000 000 cycles, i.e. an operating time of 14.5 years, $MTTF_d$ = 145 years "high"

B_{10d} (pressure switch 2S1, dynamic rod lock 2Z1) = 4 000 000 cycles, i.e. a mission time of T10 = 2.89 years, MTTFd = 28.9 years "medium"

$MTTF_d$ (sensors 1S1) = 45 000 000 h, i.e. 11 718 years "high"



By limiting the operating time of the pressure switch and rod lock to 2.89 years, this corresponds to a PL = d for the safety loop

The case study shows:

DC (1V1B) = 60% "low",
DC (2V1) = 99% "high", DC* (2Z1) = 75%

i.e. for channel O2, DC = 78% "low".

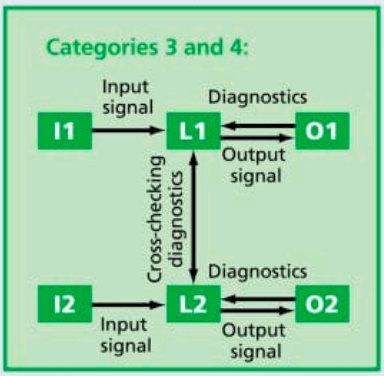
PL Performance levels
- $MTTF_d$ rating for each channel = low
- $MTTF_d$ rating for each channel = medium
- $MTTF_d$ rating for each channel = high

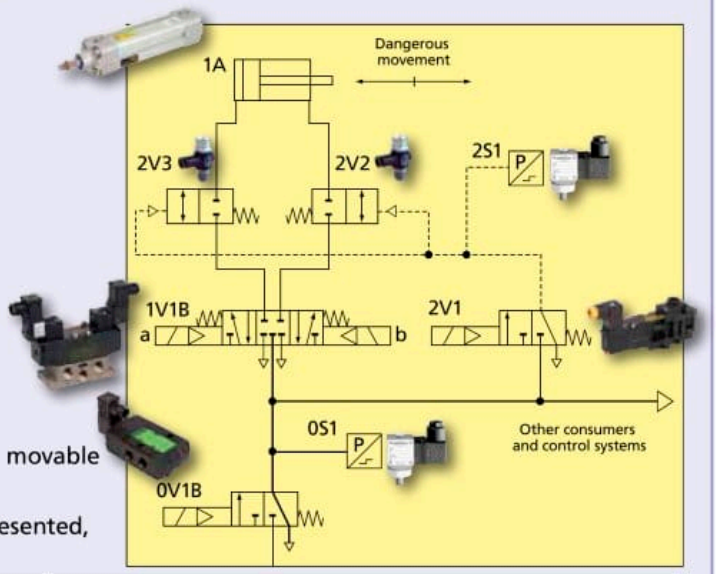
** "Good engineering practice" methods associate this type of component with a low-to-medium DC to cover any of the component's drift failures.*

FUNCTIONS

To attain a PL = d, category 3 architecture

- **Safety function:** Stopping of the potentially hazardous movement of cylinder 1A.
- **Functional description:**





Inputs 'I1' and 'I2': not represented, movable guard or light barrier, etc.

Logic elements 'L1' and 'L2': not represented, PLC

Stop of cylinder ensured by:	Diagnostics ensured by:	
Output O1: Valve 1V1B	Comparison in L1 of the supply status of coils 1V1Ba and 1V1Bb and the limit switches 1S1	Cross-monitoring of L1/L2 status coherence within the PLC
Output O2: Valve 2V1 controlling the two 2/2 "cylinder stop" valves used as braking units	Pressure switch 2S1 for transmission of signal to L2	

0V1B: Energy isolating valve: ensures the system is exhausted.

- **Calculation of the probability of dangerous failure:**

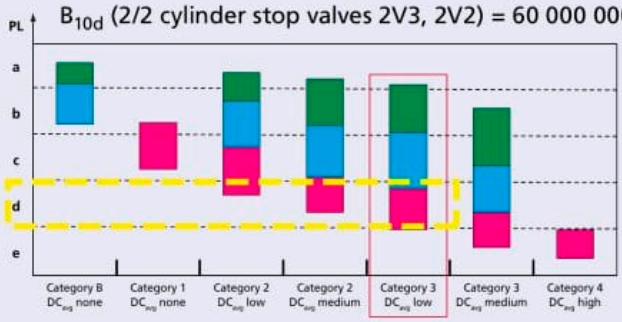
Safety function	Working hours / day	Working days / year	Cycles / year
1 cycle = 10 s	16h	240 days	1 382 400 cycles

B_{10d} (valve 1V1B - series 542) = 44 912 670 cycles, i.e. an operating time of 32.4 years, MTTFd = 324 years "high"

B_{10d} (valve 2V1 - series 520) = 20 000 000 cycles, i.e. an operating time of 14.5 years, $MTTF_d$ = 145 years "high"

B_{10d} (pressure switch 2S1) = 4 000 000 cycles, i.e. a mission time of T10 = 2.89 years, MTTFd = 28.9 years "medium"

B_{10d} (2/2 cylinder stop valves 2V3, 2V2) = 60 000 000 cycles, i.e. $MTTF_d$ = 434 years "high"



By limiting the operating time of the pressure switch to 2.89 years, this corresponds to a PL = d for the safety loop.

The case study shows:

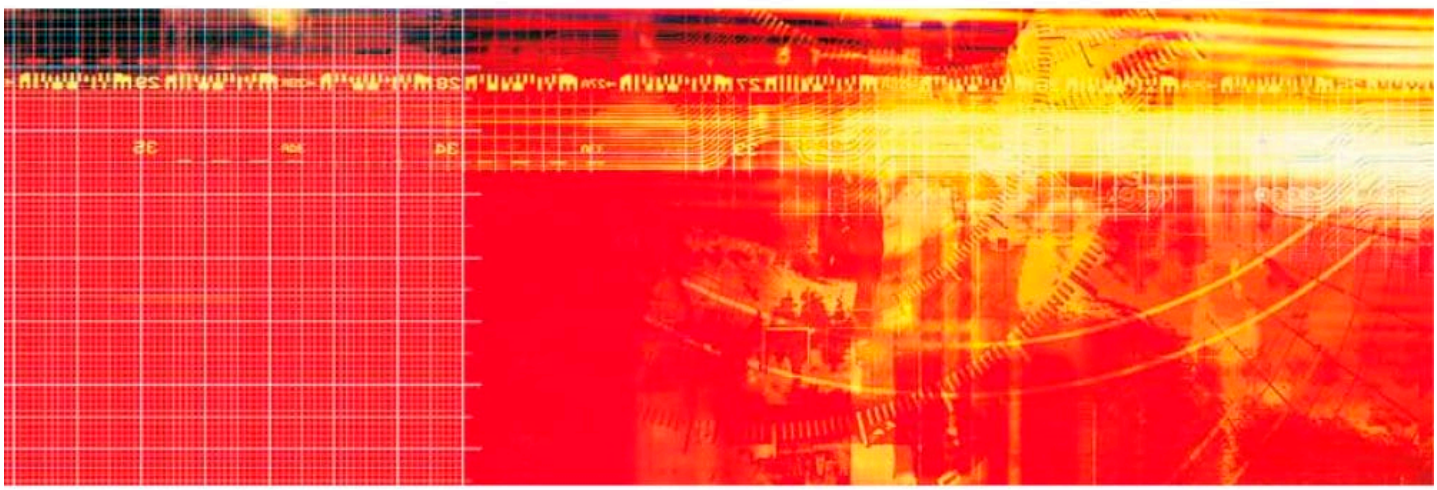
DC (1V1B)=60% "low",
DC (2V1)=99% "high", DC* (2V3, 2V2)=60%

i.e. for channel O2, DC = 78% "low".

PL Performance levels

- $MTTF_d$ rating for each channel = low
- $MTTF_d$ rating for each channel = medium
- $MTTF_d$ rating for each channel = high

** "Good engineering practice" methods associate this type of component with a low-to-medium DC to cover any of the component's drift failures.*



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Oil & Gas

Valve piloting solutions

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EMERSON™
Industrial Automation

ASCO Numatics Fluid Automation

The reliable choice for the Oil and Gas industries

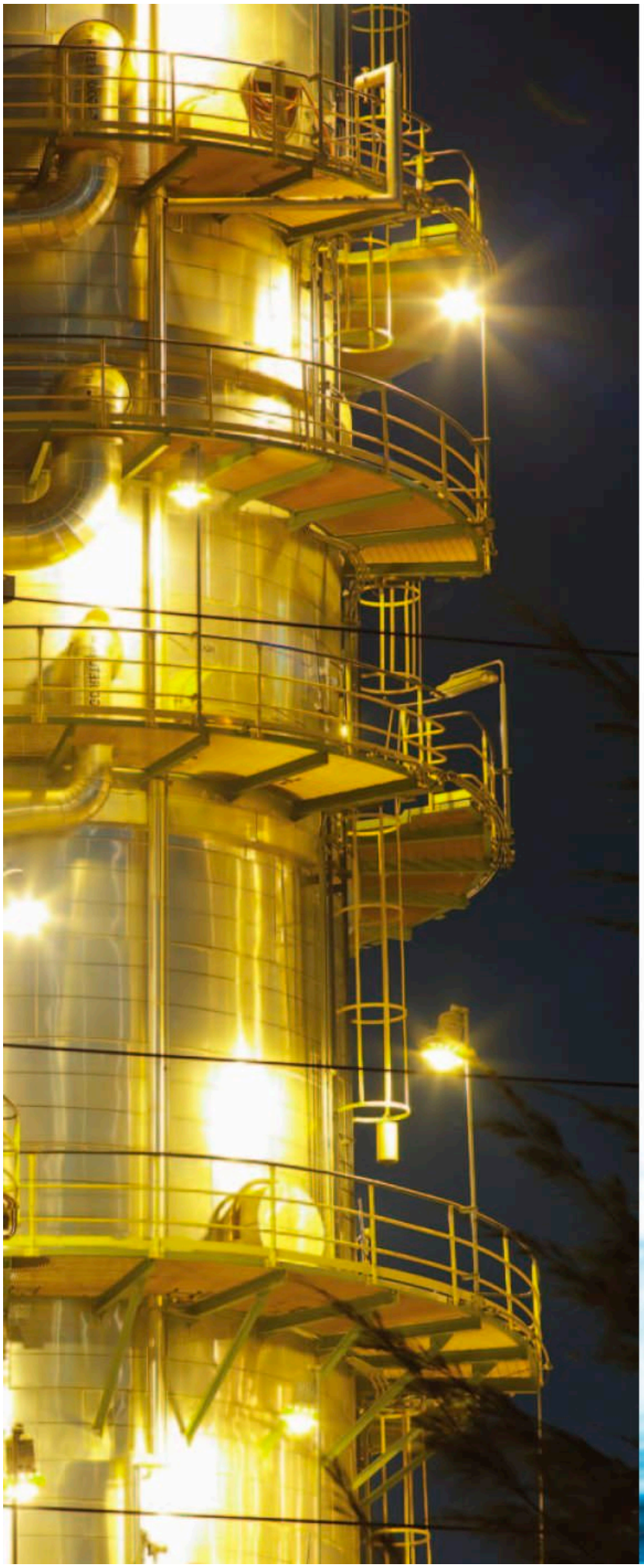
Due to our global presence, hazardous area expertise and a broad range of solenoid valves and valve piloting products and solutions, ASCO Numatics are the preferred supplier to those operating in or supplying to the Oil and Gas industry worldwide.

Our wide range of solenoid valves, air operated valves, actuator control systems, pneumatic actuators for valves and dampers, and safety related bypass panels and cabinets combine to provide integrated solutions that meet the extreme challenges of this industry.

With 100 years of experience behind us and innovations that include the first industrial solenoid valve, the first plug and play sub base and the first valve island with plain language diagnostics, we have the expertise to support our customers in applying our products to their applications and in engineering new solutions when one doesn't exist.

Whether being used in applications that are upstream, midstream or downstream, off or on shore, in the desert or in the Arctic Circle we have the products for you. Our products, solutions and services have been shown time and again to provide real benefits throughout the whole product lifecycle.

Thanks to their proven reliability and rugged engineering, ASCO Numatics products are ideal for critical and safety related applications. Their extensive certification, low power capabilities and corrosion resistance make them the most specified products for a wide range of applications, no matter where in the world they are used and no matter what the environmental conditions.



Global solutions

ASCO Numatics have the largest worldwide presence of any supplier in our business. So you get consistent and reliable local service and technical support wherever you are.

Engineering capabilities

ASCO Numatics has the capability to deliver bespoke valve automation and control solutions based on our industry-leading range of solenoid valves, air operated valves, cylinders and air preparation equipment.

Market leading products

With a broad product range, high flow capabilities, a full range of hazardous area and SIL certification, extreme corrosion resistance and a market leading efficiency, our products are ideally suited for tough severe service Oil & Gas applications.

Deep product and process expertise

Our designers, engineers, service people, and representatives are renowned as being the experts in valve piloting and fluid control. They know it inside and out whatever the application. This knowledge has been developed during more than 100 years in the industry.

Proven reliability and quality

Our employees and customers expect a well engineered product and superior reliability. Survey after survey confirms they get it.

ASCO Numatics Fluid Automation

The advantages of working with ASCO Numatics

No other company can equal the ASCO Numatics range and competence and provide the kind of stability that being part or a company like Emerson can bring. This in itself delivers significant value to our customers.

Cutting engineering time

Our fully engineered actuator control systems, bypass panels and control cabinets can drastically reduce your engineering man hours. Working from process schematics, we can design and manufacture complete solutions that are delivered to site fully certified and ready to be installed.

Reducing project installation costs

Installing reduced power solenoid valves saves money throughout the project. Reduced power means thinner cabling, more pilots per node and fewer or lower capacity power supplies. Installing fully certified cabinets or panels instead of individual components reduces the time taken on site during the construction phase.

Greater asset uptime and higher productivity

Time lost to shutdowns or delays can become very expensive very quickly. ASCO Numatics products have unique features that enable a longer service life. Independent tests as part of the SIL certification have confirmed our extended safety and reliability.

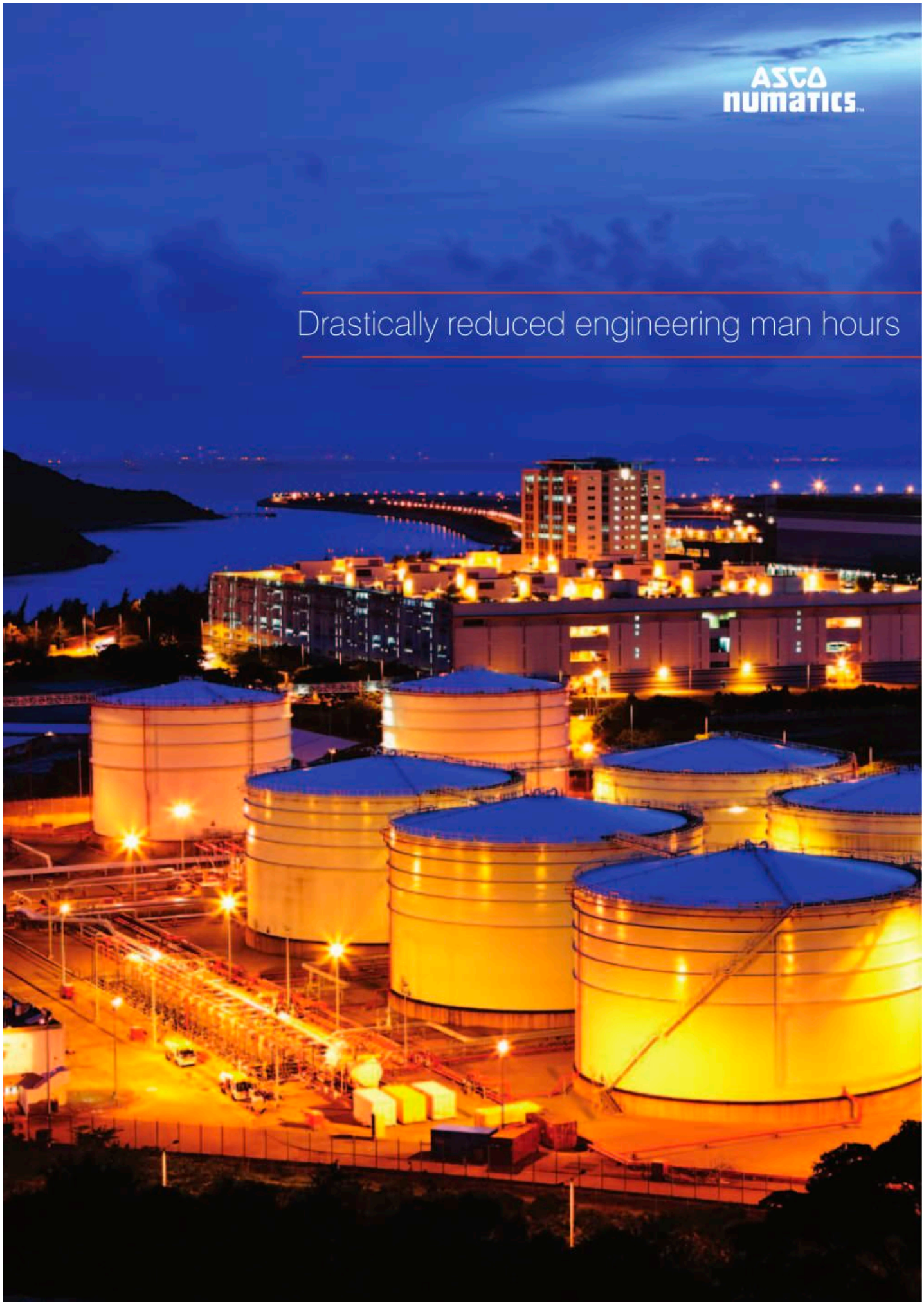
Smoother integration

Our products work efficiently together and with third-party products. You get far fewer integration issues, and take less risk.

Single point of accountability

We supply more products and solutions - so you have fewer calls to make and have greater peace of mind.

The ability to deliver bespoke valve automation and control solutions


ASCO
numatics
Drastically reduced engineering man hours

ASCO Numatics Fluid Automation

Applications

Valve piloting

With numerous options for process and safety valve piloting we are able to meet your needs – with no compromise. Whether looking for an actuator control system with a filter regulator, redundant solenoid valves and other accessories, or for a fully NACE compliant, stainless steel poppet valve we have the products to suit. We offer direct operated poppet valves, indirect operated spool valves and valve islands for high density applications.

Offshore

ASCO pilot valves have been used in offshore applications for many years, including in the harsh environmental conditions of the North Sea. The “non-breathing” design of our 327 direct operated pilot valve ensures the external environment is kept where it belongs – external to the valve. This enables greater reliability and less chance for seizure. Likewise, our use of NACE compliant materials on these valves does not stop on the outside either. If material can be exposed to the environment when under repair or when being installed then we have ensured that is compliant also.

Safety related applications

Whether looking for a SIL certified pilot valve, a redundant control system cabinet or a solenoid valve for use in a High Integrity Protection System, we have the product for you. Certified to SIL level 3 and with an extremely high mean time between failures (MTBF) you can be assured that our safety related solutions will protect your plant for years to come.

327 solenoid valves installed in a cabinet for an Oil & Gas valve piloting application

ASCO Numatics Fluid Automation

Applications

Namur interfaces

For those applications where a Namur interface is essential we have products to suit. Ideal for close-coupling a solenoid valve to an actuator or to a positioner, a Namur interface ensures standard mounting dimensions and reduces the need for extensive engineering. A Namur interface prevents the actuator breathing air from the environment, a potential source of failure.

Hazardous areas

Our engineers have extensive knowledge and profound understanding of hazardous area legislation and its application. Our aim is to always work one step ahead of the latest approved standard wherever possible. This ensures we maintain our leadership position in this market. In order to best serve the global Oil & Gas markets our products are available with all the major hazardous area certification including ATEX, GOST, UL, CSA and NEPSI.

Valve and damper actuation

We have a full range of pneumatic cylinders and accessories for actuating control valves and dampers. With various designs and materials available as well as numerous piloting options these can easily be integrated into a full automation solution.

With all the solenoid valves installed in a cabinet the only site work required is one electrical connection, one pneumatic inlet connections and pneumatic outlet connections made at a bulkhead

ASCO Numatics Fluid Automation

Products and solutions

ASCO Pilot Valves

Our robust pilot valves are designed to meet the stringent demands of Oil & Gas applications. Direct mount or piped configurations can be coupled with spring-return and double-acting actuators for use throughout your process. Plus new 0.55 W models are perfect for networks with low power limitations. Our solenoid valve efficiency (the relationship between power consumption, flow rate and pressure differential) is market leading, ensuring efficient plant operation.

Actuator Control Systems

Our actuator control systems are supplied fully assembled and certified – ready to go. A full range of accessories including filter regulators, boosters, speed controllers, relief valves and non-return valves make us extremely versatile and able to meet all your requirements for process or safety applications.

Redundant control systems and by pass panels

The testing of solenoid valves used on safety related applications is crucial to maintaining safety integrity. Our bypass panels and redundant control systems enable valves to be tested while ensuring the shutdown valves can still operate as required.

ASCO Actuated Globe Valve Assembly

ASCO's 2 and 3 way piston operated process valve assembly with integrated pilot valves and a range of other accessories offer a cost effective alternative to an actuated ball valve assembly, this linear on/off valve is your stand alone solution that can be used in a variety of applications.

Air preparation equipment

These filters and regulators, treat air quality and pressure in your plant's pneumatic system. Apply them to control pressure or meet filtration requirements for your pneumatic equipment. These high-performance products are available in multiple configurations an materials, including full 316L stainless steel for use in corrosive environments.

Numatics Valve Manifolds

Many of today's pneumatic technology standards were industry firsts from ASCO Numatics. The innovations continue with our high-flow, embedded fieldbus and I/O valve manifold products. An Integrated LED display allows for easy configuration and diagnostics, and our optional Auto Recovery Module (ARM) saves and reloads all configuration data to ensure fast change-out. We offer the industries' widest variety of protocols, including DeviceNet™, Profibus® - DP, and FOUNDATION Fieldbus™. Use ASCO Numatics Valve Manifolds for clusters of pressure operated valves.

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