

VALVES SERIES 70 SAFE AIR®

Starting from the robust and reliable valves series 70, we have added a few distinctive features, such as the presence of a valve status diagnostic system and the creation of a double communication channel guaranteeing redundancy of the architecture.

The simplest version is obtained from a pneumatically-operated 3/2 monostable valve. It is well known that when this type of valve is in the idle state (coil de-energized), port 1 is not connected to the downstream pneumatic circuit and port 2 is on relief; when the valve is operated (coil energized), port 1 is connected to port 2. When the coil is de-energized again, the valve is returned to the idle state (and hence port 2 relieves) by means of a spring that returns the spool to the home position.

In the event of a failure, the spool may remain in the actuation position, even when the coil is de-energized, thus leaving port 2 pressurized. To offset this problem, we have added a Hall-effect sensor that reads the spool position. This means that when the valve is deactivated, the sensor is in the ON state, when the valve is activated, the sensor is in the OFF state.

A status in which the sensor is OFF state and the coil de-energized indicates that there is a problem.

To reduce the probability of risk during plant maintenance, the manual actuator mounted on the electric control is the monostable type. The sensor inside the valve is available in the standard version with a 2.5m three-wire cable (standard or ATEX certified) or with an M8 connector

and 300 mm cable. This valve, which is available in sizes 1/8", 1/4", 3/8" and 1/2", is a category 2 component, according to ISO EN 13849, and is suitable for use in safety circuits up to PL = c.

For applications requiring higher performance levels, we have also develop a double-channel version (redundant) that requires the use of two valves series 70 with a monitored spool arranged so that port 2 of valve 1 is connected with port 1 of valve 2. If just one of the valves de-energizes, port 2 relieves, so, even if one of the two spools remains blocked, the other guarantees relief of the compressed-air circuit. In this case, too, the presence of spool position sensors can be used to monitor the status.

The double valve, which is available in the size 1/8'', 1/4'', 3/8'' and 1/2'' as well, is a category 4 component according to ISO EN 13849 and is suitable for use in safety circuits up to PL = e.

Both the single- and double-channel valves come with:

- a voluntary examination certificate no. TC1248/21/AD/ad, issued by Bureau Veritas in accordance with EN ISO 13849;

- a certificate of compliance examination to the Machinery Directive 2006/42/EC no. CV 013-12-2014 and no. CV 014-12-2014 released by Bureau Veritas.



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VALVES SERIES 70 SAFE AIR®

SINGLE VALVE SERIES 70 SAFE AIR®

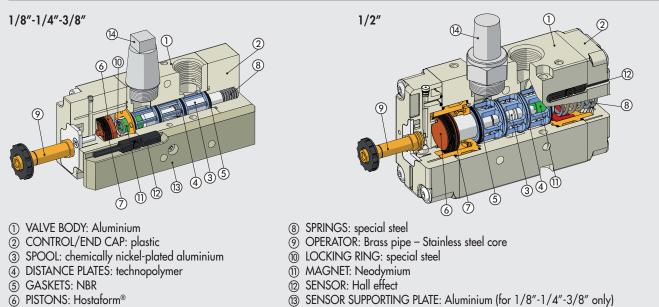
TECHNICAL DATA		1/8″	1/4″	3/8″	1/2″	
Fluid		Filtered unlubricated air (50µm); lubrication, if used, must be continuous				
Operation		3/2 monostable				
Operating pressure:	bar					
non-assisted			from 2.	5 to 10		
pilot-assisted			from vacu	um to 10		
Minimum pilot pressure	bar		2.			
Operating temperature range	°C		from -10 to +60 (from -10) to +45 for Atex version)		
Nominal diameter	mm	5	7.5	13.3	15	
Conductance C	Nl/min · bar	121	264	505	969.5	
Critical ratio b	bar/bar	0.32	0.27	0.32	0.5	
Flow rate at 6.3 bar Δp 0.5 bar	NI/min	390	820	1600	3525	
Flow rate at 6.3 bar Δp 1 bar	NI/min	530	1130	2200	4800	
Conductance C on relief	Nl/min · bar	128	270	491	969.5	
Critical ratio b on relief	bar/bar	0.23	0.29	0.40	0.62	
Flow rate on free exhaust at 6.3 bar	NI/min	900	2050	3550	7000	
TRA/TRR at 6.3 bar	ms/ms	15 / 35	19 / 45	21 / 72	38 / 110	
Installation			Any po	osition		
Assembly			In-l			
Manual actuator			Mono	stable		
Recommended lubricant			ISO and L	INI FD 22		
Compatibility with oils			See cha	pter Z1		
Coils			22 mm side, ø 8 hole – EN17	5301-803 connection, type B		
			Certified EN 60204			
			For the electrical featu	res see page B1 .60 *		
Class of protection			IP65 with coil and	connector mounted		
Noise level		Max. 78 dBA with silenced relief				
Max coil ring nut torque	Nm		1			
CE marking		In accordance with Machinery Directive, Annex V **				
ATEX category (only for versions with an ATEX	sensor)	E II 3G Ex nA IIC T4 Gc X -10°C <ta<45°c< p=""></ta<45°c<>				
			€x∕ II 3G Ex I	n IIC T4 Gc X		
			🖾 II 3D Ex tc IIIC			
Safety function		Cuts off the power supply and relieves the air circuit connected to port 2				
Type of sensor used	Hall effect (refer to page B1 .163 for sensor details)					
B10d		50 x 10 ⁶ cycles				
Category - ISO EN 13849	2					
DC		Low (80 %)				
PL - ISO EN 13849		Suitable for use in safety circuits up to PL=c				
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* To avoid malfunctions, we recommend using Metal Work accessories

** The declaration can be downloaded from www.metalwork.it

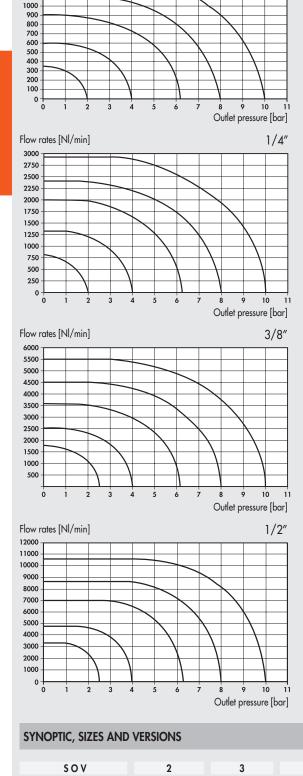
IMPORTANT: Do not mount 2 or more SAFE AIR® valves in adjacent positions. When mounting valves side by side, the minimum distance is specified in the user manual. Any ferromagnetic masses must be at least 40 mm from the sensor. Prevent magnetic fields from creating disturbance in the sensor area.

COMPONENTS



7 PISTON GASKET: NBR

(i) SILENCER



FLOW CHARTS ON DELIVERY - SINGLE VALVE

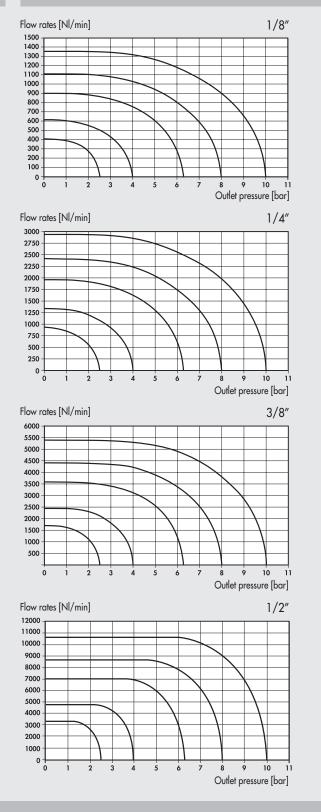
1/8″

Flow rates [NI/min]

1500 1400 1300

1200 1100

FLOW CHARTS ON RELIEF - SINGLE VALVE



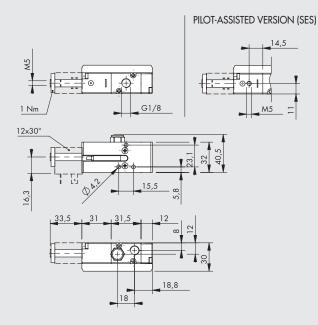
SO NC 3 F S SENSOR DIMENSIONS FUNCTION **OPERATORS** 14 **RESETTING 12** FURTHER DETAILS FAMILY 2.5 m 3 wires SOV solenoid/ 1/8″ 3 3/2 SO solenoid S mechanical springs NC Normally-Closed 3F 2 3 C SE M8 0.3 m M8 pneumatic 1/4" solenoid 3/8" assisted AT 2 m ATEX 4 1/2″



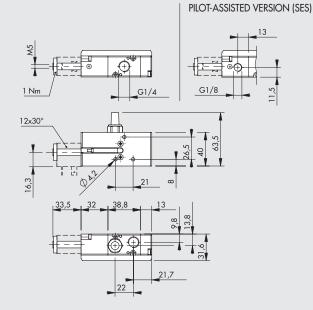




3/2 MONOSTABLE - 1/8"



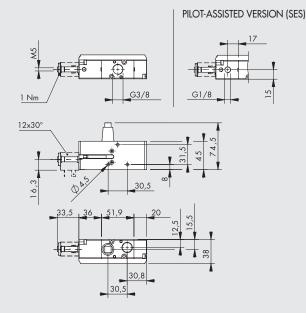
3/2 MONOSTABLE - 1/4"



Symbol	Code	Abbrev.	Sensor	Weight [g]
	7015020200	SOV 23 SOS NC 3F	2.5 m 3 wires	182
	7015120200	SOV 23 SOS NC M8	0.3 m M8	178
√3	7015220200	SOV 23 SOS NC AT	2 m ATEX	174
	7015020500	SOV 23 SES NC 3F	2.5 m 3 wires	182
	7015120500	SOV 23 SES NC M8	0.3 m M8	178
	7015220500	SOV 23 SES NC AT	2 m ATEX	174

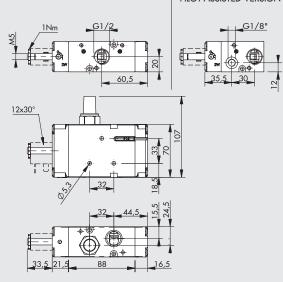
Symbol	Code	Abbrev.	Sensor	Weight [g]
	7025020200	SOV 33 SOS NC 3F	2.5 m 3 wires	252
	7025120200	SOV 33 SOS NC M8	0.3 m M8	248
	7025220200	SOV 33 SOS NC AT	2 m ATEX	244
12 6*	7025020500	SOV 33 SES NC 3F	2.5 m 3 wires	252
	7025120500	SOV 33 SES NC M8	0.3 m M8	248
	7025220500	SOV 33 SES NC AT	2 m ATEX	244

3/2 MONOSTABLE - 3/8"



3/2 MONOSTABLE - 1/2"

PILOT-ASSISTED VERSION (SES)



Symbol	Code	Abbrev.	Sensor	Weight [g]	Symbol	Code	Abbrev.	Sensor	Weight [g]
12 6	7045020200	SOV C3 SOS NC 3F	2.5 m 3 wires	402	2 3	7035020200	SOV 43 SOS NC 3F	2.5 m 3 wires	705
	7045120200	SOV C3 SOS NC M8	0.3 m M8	398		7035120200	SOV 43 SOS NC M8	0.3 m M8	705
	7045220200	SOV C3 SOS NC AT	2 m ATEX	394		7035220200	SOV 43 SOS NC AT	2 m ATEX	705
12 6	7045020500	SOV C3 SES NC 3F	2.5 m 3 wires	402	2 6	7035020500	SOV 43 SES NC 3F	2.5 m 3 wires	700
	7045120500	SOV C3 SES NC M8	0.3 m M8	398	ta t	7035120500	SOV 43 SES NC M8	0.3 m M8	700
	7045220500	SOV C3 SES NC AT	2 m ATEX	394		7035220500	SOV 43 SES NC AT	2 m ATEX	700

EXAMPLE OF A SAFETY CIRCUIT WITH A SINGLE VALVE

Below is an example of a wiring diagram for controlling Metal Work SAFE AIR® single valves using Pilz® components.

Circuit components:

- a Pilz[®] safety module PNOZ[®] s3 for controlling the emergency stop button; terminal Y32 indicates the status of the module, which can be relayed to the machine control logic
- an emergency stop button S1 (Pilz[®] PIT[®] es Set) linked to terminals S11-S12-S22-S23 of the PNOZ[®] s3
- a Metal Work SAFE AIR® solenoid valve, the 24 VDC coil of which is fed by terminal 14 of the PNOZ® s3 (the other terminal of the coil is 0 V); the valve's Hall-effect sensor is 24 VDC
- a start/reset button S2
- a relay K1, controlled by the valve sensor; an NO contact of the relay is in series with button S2 of the PNOZ® s3.

Expected behaviour with the system operating correctly:

- system deactivated:
- contact 14 is OFF
- the coil is de-energized
- the sensor is ON
- relay K1 is energized
- contact K1 is closed
- contact Y32 is OFF
- with the system activated via the start/reset button S2:
- contact 14 is ON
- the coil is energized
- the sensor is OFF
- relay K1 is de-energized
- contact K1 is open

VALVES SERIES 70 SAFE AIR®

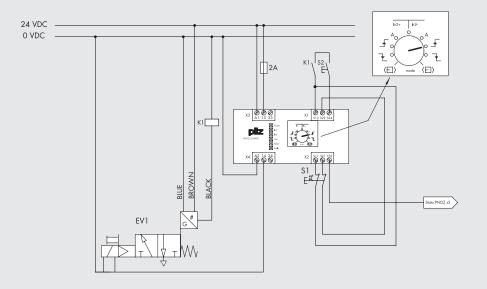
contact Y32 is ON

In the event of a malfunction (e.g. spool jam), the coil is de-energized but the sensor remains OFF, relay K1 remains de-energized, contact K1 remains open (preventing subsequent restarts) and contact Y32 is OFF.

In the event of a valve fault, the circuit in the diagram below does not allow relief of the compressed air system. Sensor status must be monitored to assess valve operation. Contact Y32 indicates the status of the PNOZ® s3, not the status of the sensor.

All the electrical connections between the various components must comply with the applicable safety regulations.

If the emergency button is operated at a frequency of 1 actuation per hour, the circuit activates a safety function with PL = c (calculations made with the PAScal programme by Pilz[®]). Responsibility for final checking that PL lies with the person assembling the circuit.



VALVES

VALVES SERIES 70 SAFE AIR®

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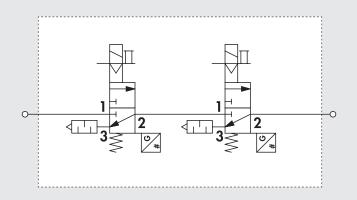
DOUBLE VALVE SERIES 70 SAFE AIR®

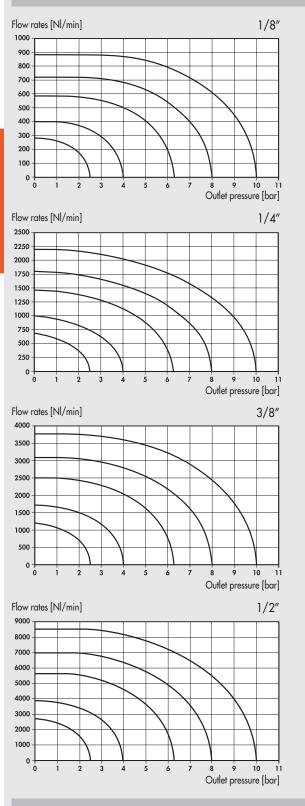
Fluid Filtered unlubricated air (50µm); lubrication; if used, must be continuous Operating pressure: bar pilot-assisted from 2.5 to 10 Minimum pilot pressure bar Operating temperature range °C Critical ratio b bar /bar Conductance C N/min Flow rate of 3.5 bar /b 10 0.35 Conductance C N/min Flow rate of 3.5 bar /b 10 r N//min Flow rate of 3.5 bar /b 10 r N/min Store of 1.5 bar /b 10 r N/min Conductance C on relief N/min Flow rate of 6.3 bar /b 10 r N/min Store of 6.3 bar /b 10 r N/min Conductance C on relief N/min Chow rate on free exhaust at 6.3 bar N/min Yas 28 / 35 38 / 45 S0 / 72 85/110 TRA/TRR 6.3 bar ms/ms 28 / 35 38 / 45 S0 / 72 85/110 Assembly Installelino Installence Maroustable Score (Store	TECHNICAL DATA		1/8″	1/4″	3/8″	1/2″		
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Flow rate at 6.3 bar Δp 0.5 bar NI/min 261 561 1038 2355 Flow rate at 6.3 bar Δp 1 bar NI/min 358 778 1433 3250 Conductance C on relief NI/min 588 778 1433 3250 Conductance C on relief bar/bar 322 228 491 969.5 Critical ratio b on relief bar/bar 0.27 0.21 0.54 Flow rate on free exhaust at 6.3 bar NI/min 930 1700 3550 7000 TRA/TRR a 6.3 bar ms/ms 28 / 35 38 / 45 50 / 72 85/110 Instillation - - Manual actuator Manual actuator Manual actuator Recommended lubricant - IsO e UNI FD 22 Compatibility with oils See chapter 21 Coils - 22 ms side, ø 8 hole - EN175301-803 connection, type B Certified EN 602041 and VBE 0580 Noise level Max 201 ring nut torque Nm 1 - Noise level Max 201 ring nut torque Nm - - <td></td> <td>Nl/min · bar</td> <td>80</td> <td>202</td> <td>346</td> <td>782.5</td>		Nl/min · bar	80	202	346	782.5		
Flow rate at 6.3 bar Δ_p 1 bar Nl/min 358 778 1433 3250 Conductance C on relief Nl/min 132 228 491 969.5 Critical ratio b on relief bar/bar 0.27 0.21 0.21 0.54 Flow rate on fore exhaust at 6.3 bar Nl/min 930 1700 3550 7000 TRA/TRR a 6.3 bar ms/ms 28 / 35 38 / 45 50 / 72 85/110 Installation	Critical ratio b	bar/bar	0.35	0.11	0.24	0.25		
Conductance C on relief N//min · bar 132 228 491 969.5 Critical ratio b on relief bar/bar 0.27 0.21 0.21 0.54 Flow rate on free exhaust at 6.3 bar NI/min 930 1700 3550 7000 RA/TRR 6.3 bar ms/ms 28 / 35 38 / 45 50 / 72 85/110 Installation ms/ms 28 / 35 38 / 45 50 / 72 85/110 Assembly Manual actuator Any position In-fine Monostable Recommended lubricant See chapter 21 See chapter 21 See chapter 21 Coils See fropter 21 See page 81.60 - See See See See See See See See See S	Flow rate at 6.3 bar ∆p 0.5 bar	NI/min	261	561	1038	2355		
Conductance C on relief N/min · bar 132 228 491 969.5 Critical ratio b on relief bar/bar 0.27 0.21 0.21 0.54 Flow rate on free exhaust at 6.3 bar NI/min 930 1700 3550 7000 TRA/TRR a 6.3 bar ms/ms 28 / 35 38 / 45 50 / 72 85/110 Installation		NI/min	358	778	1433	3250		
Flow rate on free exhaust at 6.3 barNI/min930170035507000TRA/TRR a 6.3 barms/ms28 / 3538 / 4550 / 7285/110Installation28 / 3538 / 4550 / 7285/110AssemblyIn-lineIn-lineMonostableRecommended lubricantCompatibility with allsSee dapter 21See dapter 21Conjas22 mm side, ø 8 hole - EN175301-803 connection, hype B22 mm side, ø 8 hole - EN175301-803 connection, hype BCalss of protectionIP65 with coil and connector mountedMax. 78 dBA with silenced reliefNoise levelMax. 78 dBA with silenced reliefMax. 78 dBA with silenced reliefArEX category (only for versions with an ATEX sensor)Safety functionSi II 3G Ex nA IIC T4 Gc X - 10°C <tac45°c< td="">Safety functionCuts off the power supply and relieves the air circuit connected to port 2Si II 3G Ex nA IIC T4 Gc XType of sensor usedSu X - 10°C<tac45°c< td="">Si II 3G Ex nA IIC T4 Gc XBlodCuts off the power supply and relieves the air circuit connected to port 2Supply of Sensor usedHall effect (refer to page B1.163 for sensor details)BlodSupply - 148Su X - 10°C cyclesCategory ISO EN 138494CFHigh (2 99 %)CCFSo CSu C</tac45°c<></tac45°c<>		Nl/min · bar	132	228	491	969.5		
TRA/TRR a 6.3 bar ms/ms 28 / 35 38 / 45 50 / 72 85/110 Installation Any position In-line Manual actuator Assembly In-line Monosable Recommended lubricant ISO e UNI FD 22 Compatibility with oils See chapter Z1 Coils See chapter Z1 Constrained features see page B1.60 * In-line Cass of protection IP65 with coil and connector mounted In accordance with and VDE 0580 Class of protection IP65 with coil and connector mounted In accordance with and IC T4 Gc X - 10° C <tac.45° c<="" td=""> Noise level Max. coil ring nut torque Nm 1 ATEX category (only for versions with an ATEX sensor) Iso a supplication on the constrained on the co</tac.45°>	Critical ratio b on relief	bar/bar	0.27	0.21	0.21	0.54		
Installation Any position Assembly In-line Manual actuator Monostable Recommended lubricant ISO e UNI FD 22 Compatibility with oils See chapter 21 Coils 22 mm side, ø 8 hole - EN175301-803 connection, type B Coils 22 mm side, ø 8 hole - EN175301-803 connection, type B Coils 22 mm side, ø 8 hole - EN175301-803 connection, type B Coils Certified EN 60204.1 and VDE 0580 Class of protection IP65 with coil and connector mounted Noise level Max. 78 dBA with silenced relief Max coil ring nut torque Nm 1 CE marking In accordance with Machinery Directive, Annex V ** ATEX category (only for versions with an ATEX sensor) Ew II 3G Ex n IIC T4 Gc X - 10°C <ta<45°c< td=""> Will II 3D Ex tc IIIC T135°C Dc IP65 Safety function Cuts off the power supply and relieves the air circuit connected to port 2 Type of sensor used Hall effect (refer to page B1.163 for sensor details) B10d B10d S0 x 10° cycles Category - ISO EN 13849 4 DC Gref ligh [≥ 99 %) CCF 80</ta<45°c<>	Flow rate on free exhaust at 6.3 bar	NI/min	930	1700	3550	7000		
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Assembly In-line Manual actuator Monostable Recommended lubricant ISO e UNI FD 22 Compatibility with oils See chapter 21 Cools See chapter 21 Cools Certified EN 6020.4.1 and VDE 0580 Certified EN 6020.4.1 and VDE 0580 Certified EN 6020.4.1 and VDE 0580 Class of protection Certified EN 6020.4.1 and VDE 0580 Noise level Max. 78 dBA with silenced relief Max coil ring nut torque M CE marking In accordance with Machinery Directive, Annex V ** AEX category (only for versions with an ATEX sensor) Sie II 3G Ex n A IIC T4 Gc X - 10°C <ta<45°c< td=""> Safety function Sie Supply and relieves the air circuit connected to port 2 Type of sensor used Cuts off the power supply and relieves the air circuit connected to port 2 B10d Sox 10° cycles Category - ISO EN 13849 A DC B0 Cuts High [≥ 99 %) CCF 80</ta<45°c<>	Installation			Any p	osition			
Recommended lubricant ISO e UNI FD 22 Compatibility with oils See chapter Z1 Coils 22 mm side, ø 8 hole – EN175301-803 connection, type B Coils Certified EN 60204.1 and VDE 0580 Class of protection For the electrical features see page B1.60 * Noise level Max. 78 dBA with silenced relief Max coil ring nut torque Nm CE marking In accordance with Machinery Directive, Annex V ** ATEX category (only for versions with an ATEX sensor) Example Single Singl	Assembly							
Compatibility with oilsSee chapter Z1Coils $22 nm side, ø 8 hole - EN175301-803 connection, type BCoilsCertified EN 60204.1 and VDE 0580Certified EN 60204.1 and VDE 0580For the electrical features see page B1.60 *Class of protectionIP65 with coil and connector mountedNoise levelMax. 78 dBA with silenced reliefMax coil ring nut torqueNmCE markingIn accordance with Machinery Directive, Annex V **ATEX category (only for versions with an ATEX sensor)Imaccordance with Machinery Directive, Annex V **Safety functionCuts off the power supply and relieves the air circuit connected to port 2System SuppleSupple of sensor usedB10dSupple of sensor usedCategory - ISO EN 138494DCHigh (≥ 99 %)CCF80$	Manual actuator			Mono	stable			
Coils 22 mm side, ø 8 hole - EN175301-803 connection, type B Coils Certified EN 60204.1 and VDE 0580 Class of protection For the electrical features see page B1.60 * Noise level Max. 78 dBA with silenced relief Max coil ring nut torque Nm CE marking In accordance with Machinery Directive, Annex V ** ATEX category (only for versions with an ATEX sensor) € will 3G Ex nA IIC T4 Gc X - 10°C < Ta<45°C	Recommended lubricant			ISO e Ul	NI FD 22			
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DC High (≥ 99 %) CCF 80								
DC High (≥ 99 %) CCF 80	Category - ISO EN 13849		,					
CCF 80			High (≥ 99 %)					
PL - ISO EN 13849 Suitable for use in safety circuits up to PL = e	CCF							
	PL - ISO EN 13849		Suitable for use in safety circuits up to PL = e					

* To avoid malfunctions, we recommend using Metal Work accessories ** The declaration can be downloaded from www.metalwork.it

IMPORTANT: Any ferromagnetic masses must be at least 40 mm from the sensor. Prevent magnetic fields from creating disturbance in the sensor area.

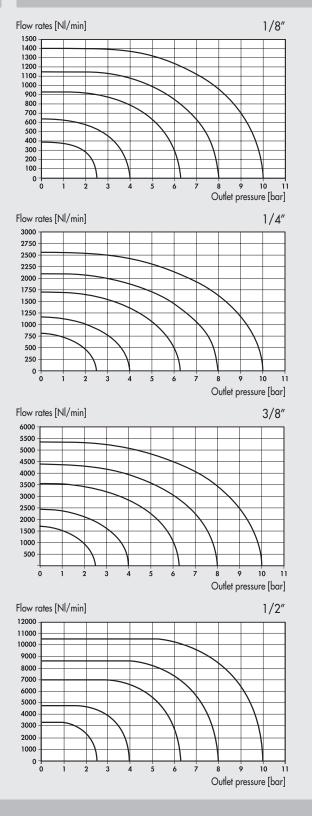
WIRING DIAGRAM

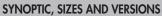




FLOW CHARTS ON DELIVERY - DOUBLE VALVE

FLOW CHARTS ON RELIEF - DOUBLE VALVE





S O V FAMILY	2 DIMENSIONS	3 FUNCTION	S O OPERATORS 14	S RESETTING 12	D D FURTHER DETAILS	3 F SENSOR
SOV solenoid/ pneumatic	2 1/8" 3 1/4" C 3/8" 4 1/2"	3 3/2	SO solenoid SE solenoid assisted	S mechanical springs	DD double 3/2	3F 2.5 m 3 wires M8 0.3 m M8 AT 2 m ATEX



DOUBLE 3/2 MONOSTABLE 1/8"-1/4"-3/8"

7015120510

7015220510

7025020210

7025120210

7025220210

7025020510

7025120510

7025220510

7045020210

7045120210

7045220210

7045020510

7045120510

7045220510

1/8"

1/8"

1/4"

1/4"

1/4"

1/4"

1/4"

1/4"

3/8"

3/8"

3/8"

3/8"

3/8"

3/8"

SOV 23 SES DD M8

SOV 23 SES DD AT

SOV 33 SOS DD 3F

SOV 33 SOS DD M8

SOV 33 SOS DD AT

SOV 33 SES DD 3F

SOV 33 SES DD M8

SOV 33 SES DD AT

SOV C3 SOS DD 3F

SOV C3 SOS DD M8

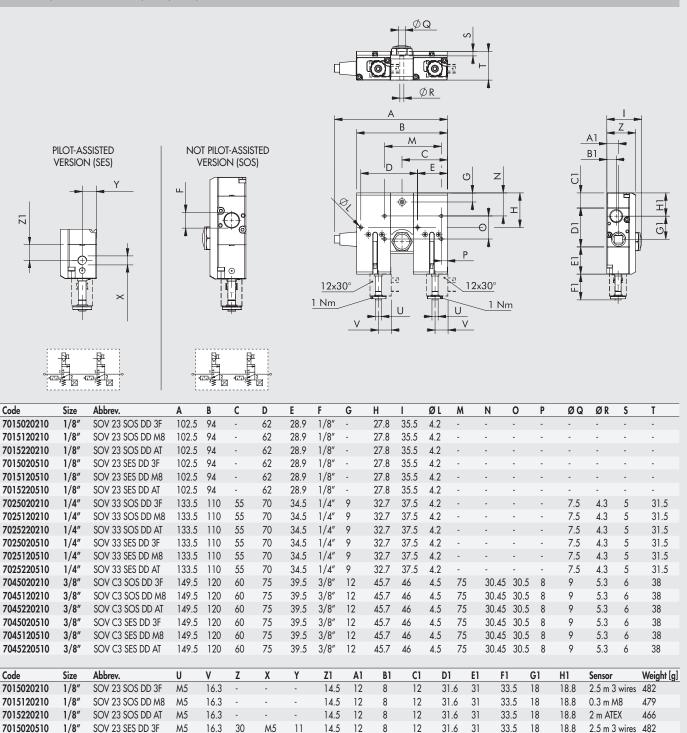
SOV C3 SOS DD AT

SOV C3 SES DD 3F

SOV C3 SES DD M8

SOV C3 SES DD AT

M5



31.6

31.6 31

38.9

38.9

38.9

519

51.9 36

51.9 36

51.9 36

51.9 36

51.9

31

32

32

32

32

32

36

36

12

12

13.25

13.25 38.9 32

13.25

13.25 38.9

13.25 38.9

13.25

20

33.5

33.5 18

33.5 22

33.5 22

33.5 22

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33.5 22

33.5 22

33.5

33.5

33.5

33.5

33.5

33.5

18

30.5

30.5

30.5

30.5

30.5

30.5

188

18.8

217

21.7

217

21.7

21.7

21.7

30.8

30.8

30.8

30.8

30.8

30.8

0.3 m M8

2 m ATEX

2.5 m 3 wires

2.5 m 3 wires

2.5 m 3 wires 632

2.5 m 3 wires 632

474

466

624

616

624

616

972

964

956

972

964

956

30

-

31.6

31.6

31.6

38

M5

M5

1/8″

1/8″

1/8″

1/8" 15

1/8" 15

1/8″

-

11

11

-

11.5 13

11.5 13

11.5 13

15

14.5 12

14.5 12

13

13

13

17

17

17

17

17

17

8

8

13.8

13.8 9.8

13.8

13.8 9.8

13.8 9.8

13.8 9.8

15.5

15.5

15.5

15.5

15.5

15.5

98

98

12.5 20

12.5 20

12.5 20

12.5 20

12.5 20

12.5

163

16.3 30

16.3

16.3

16.3

16.3

16.3

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16.3

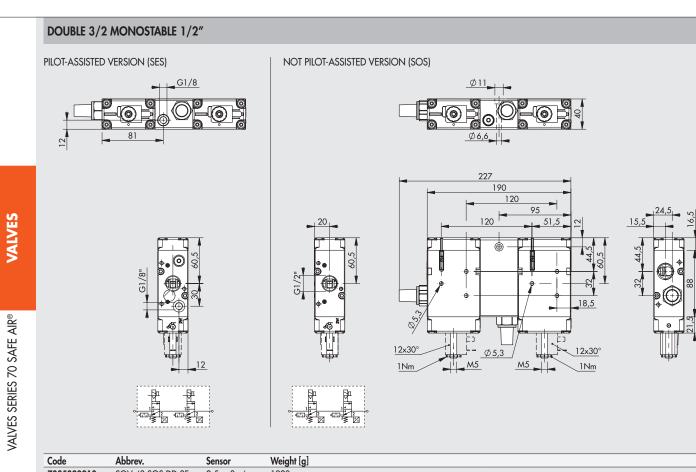
16.3

16.3

16.3 38

16.3 38

163



Code	Abbrev.	Sensor	Weight [g]
7035020210	SOV 43 SOS DD 3F	2.5 m 3 wires	1920
7035120210	SOV 43 SOS DD M8	0.3 m M8	1920
7035220210	SOV 43 SOS DD AT	2 m ATEX	1920
7035020510	SOV 43 SES DD 3F	2.5 m 3 wires	1915
7035120510	SOV 43 SES DD M8	0.3 m M8	1915
7035220510	SOV 43 SES DD AT	2 m ATEX	1915

NOTES



EXAMPLE OF A SAFETY CIRCUIT WITH A DOUBLE VALVE

Below is an example of a wiring diagram for controlling double valves SAFE AIR® a Metal Work using Pilz® components. Circuit components:

- a Pilz® PNOZ® mm 0.1p modular safety system
- an emergency stop button S1 (Pilz[®] PÍT[®] es Set) linked to terminals T0-T1-I8-I9 of the PNOZ[®] mm 0.1p
- a Metal Work double solenoid valve SAFE AIR®, the 24 VDC coils of which are fed by terminals O0 (SV1) and O1 (SV2) of the PNOZ®
- mm 0.1p (the other terminals of the coils are OV); the valves' Hall-effect sensors are 24 VDC
- the sensor signals are relayed to terminals 16 (SV1) and 17 (SV2) of the PNOZ $^{\otimes}$ mm 0.1p
- a start/reset button S2

Expected behaviour with the system operating correctly:

- system deactivated:
- contacts O0 and O1 are OFF
- the coils are de-energized
- the sensors are ON (and hence signals to terminals 16 and 17)
- if one of the sensors is OFF, the Pilz® module does not allow subsequent start/reset
- with the system activated via the start/reset button:
- contacts O0 and O1 are ON
- the coils are energized
- the sensors are OFF (and hence signals to terminals 16 and 17)

The PNOZ® mm 0.1p module is programmed so that:

- when either sensor is OFF, and the coils are de-energized, the module does not allow subsequent restarts.

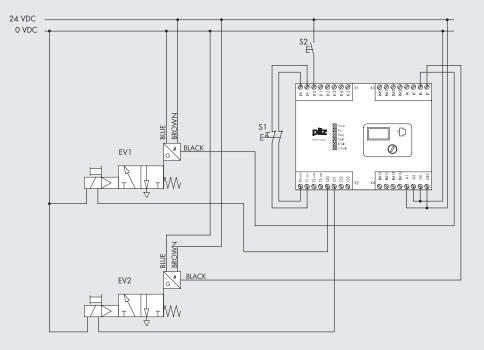
- when the valves are energized, the 2 sensors must go off within the valve actuation time (28 ms for Series 70 1/8", 38 ms for Series 70 1/4" and 50 ms for Series 70 3/8" and 85 ms Serie 70 1/2"), otherwise the 2 valves are switched off again.

The programme can be downloaded from www.metalwork.it (the licence for programming Pilz® modules is not included).

All the electrical connections between the various components must comply with the applicable safety regulations.

If the emergency button is operated at a frequency of 1 actuation per hour, the circuit activates a safety function with PL = e (calculations made with the PAScal programme by Pilz[®]).

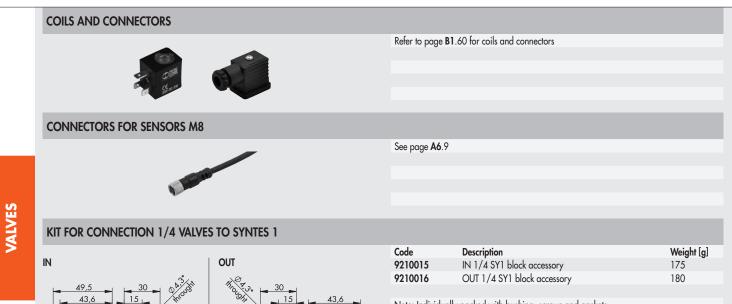
Responsibility for final checking that PL lies with the person assembling the circuit.



B 1

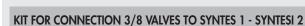
VALVES SERIES 70 SAFE AIR®

ACCESSORIES

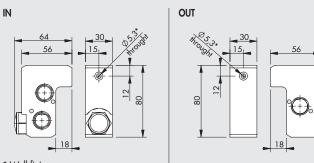


12

Note: Individually packed with bushing, screws and gaskets.



57



57,5 o

Code	Description	Weight [g]
9210022	IN 3/8 SY1 block accessory	297
9210023	OUT 3/8 SY1 block accessory	302
9210017	IN 3/8 SY2 block accessory	325
9210018	OUT 3/8 SY2 block accessory	330

Note: Individually packed with bushing, screws and gaskets.

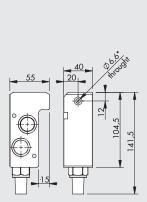
* Wall fixing

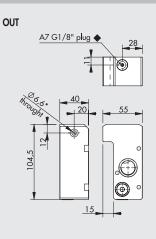
IN

12

* Wall fixing

KIT FOR CONNECTION 1/2 VALVES TO SYNTESI 2





Code	Description	Weight [g]
9210020	IN 1/2 SY2 block accessory	515
9210021	OUT 1/2 SY2 block accessory	503

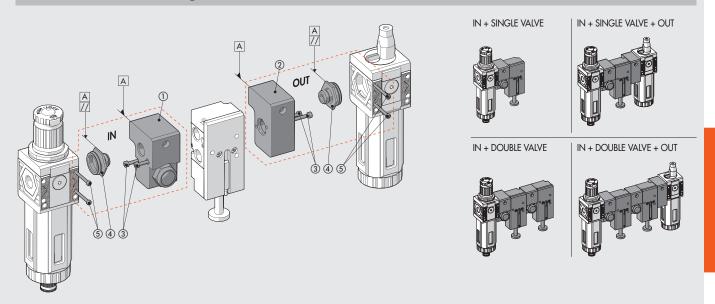
Note: Individually packed with bushing, screws and gaskets.

* 11

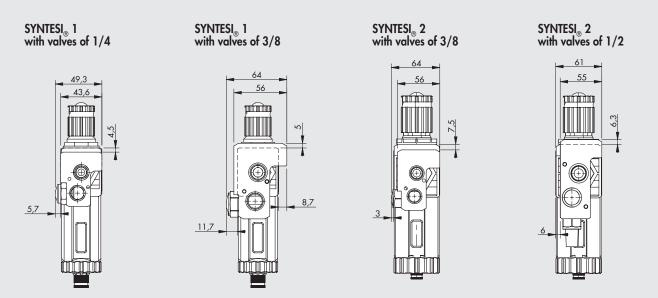
Wall fixing
For pilot assisted version remove the G1/8 plug



ASSEMBLY DIAGRAM WITH SYNTESI



- 1) Connect the inlet ① or outlet ② plate to the safety component SAFE AIR® valve using the two TCE screws ③.
- Screw the connecting bushing onto the input or output plate as far as it will go. (Use sealant on the G1/4", G3/8" or G1/2" thread to provide a further seal).
- 3) Unscrew the bushing slightly until two surfaces of the hexagon are parallel to the body of plate ① or ② (see diagram).
- 4) Insert the bushing ④ into the Syntesi_® unit.
- 5) Tighten the two self-tapping screws 🖲 in the Syntesi, unit to a torque of 0.4 Nm max (SY1) and 2.5 Nm max (SY2).



N.B. The output accessory for Syntesi_® is optional. It should be used when you intend to mount a Syntesi_® component downstream the SAFE AIR[®] safety device. The **REG**, **FR**, **V3V**, **APR** elements **cannot be mounted** downstream the safety valves because if the elements are blocked, safety relief is not guaranteed.

VALVES