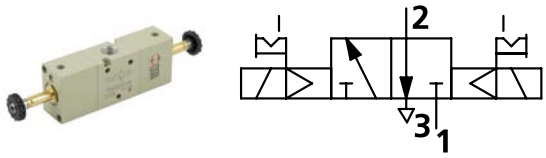
3/2-way valve

electropneumatic, without connector and coil, series 70 low temperature

PLUS

Art. No. 149937

Type No. 70L2020100



Exemplary illustration

The series 70 low temperature valves in electropneumatic version complement our range of traditional way valves of series 70. They represent a selection of the most commonly used electropneumatic way valves, which are manufactured with components for special low temperature applications. These valves have a wide range of applications as bushing valves, direct mounting on the cylinder with special adapters or as series valves with multi-base plates and individual interlinking plates (supply strips).

Technical data

Function	3/2
Operation	bistable
Control air supply	internal
Connection	G 1/4 IT
Voltage	without voltage
DN	7.5
Flow rate measurement 1	flow rate at 6 bar and Δp 0.5 bar
Flow rate 1	750 Nl/min
Flow rate measurement 2	flow rate at 6 bar and Δp 1 bar
Flow rate 2	1100 Nl/min
Medium	filtered, dry and unlubricated compressed air
Required purity class in accordance w. ISO 8573-1	4.2.3
Min. operating pressure at -40 to -10 °C	5 bar
Min. operating pressure at -10 to 60 °C	3 bar
Operating pressure	max. 10 bar
Medium temperature	-40 to 60 °C
Ambient temperature	-40 to 60 °C
Valve body	aluminium
Piston	nickel-plated aluminium
Sealant	NBR
Spring	special steel

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Technical data

Control air port	-
Manual control	latching

Plug and coil are not included in delivery!
Series 70 low temperature valves require the use of 22 mm coils with 5 W or 5 VA.

Commercial data

Customs tariff number	84818079
Country of origin	IT
eCl@ss 5.1.4	27291501
eCl@ss 9.0	27291390
UNSPSC_Code_v190501	40141603
UNSPSC_CodeDesc_v190501	Pneumatic valves

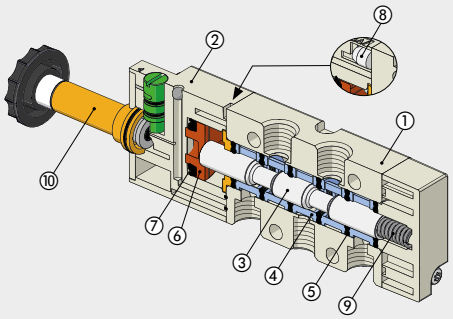
VALVES SERIES 70

The Series 70 forms part of Metal Work's full range of traditional valves.
They are available in sizes 1/8", 1/4", 3/8" and 1/2", versions 3/2, 5/2, 5/3 and double 3/2, with mechanical, manual, pneumatic and electric drives.
They can be installed in line, onto a wall, on the cylinder (using a special bracket) or in series (on a multiple or modular base) to suit all possible applications.
A range of valves (Series 70 LT) designed using components for specific low-temperature applications is now available for the most commonly used types and sizes.
These highly reliable valves comply with the main applicable standards, including Atex, ISO 13489 and SIL, as stated in the documents and certificates available online.

TECHNICAL DATA			1/8"	1/4"	3/8"	1/2"
Thread on the valve ports			1/8"	1/4"	3/8"	1/2"
Operating pressure series 70 versions		bar				
monostable and bistable differential			2.5 to 10			
bistable			1 to 10			
asserved			vacuum to 10			
Operating pressure series 70 LT (low temperature) versions		bar				
hand operated			vacuum to 10		-	
pneumatic and solenoid/pneumatic	t = -40°C to -10°C		5 to 10		-	
	t = -10°C to +60°C		3 to 10		-	
Minimum pilot pressure		bar	2.5			
Operating temperature range		°C				
series 70 versions			-10 to +60			
series 70 LT (low temperature) versions			-40 to +60			
Nominal diameter		mm	5	7.5	13.3	15
Conductance C		Nl/min · bar	121.43	264.26	505.52	971.43
Critical ratio b		bar/bar	0.32	0.27	0.32	0.43
Flow rate at 6 bar ΔP 0.5 bar		Nl/min	400	750	1560	3200
Flow rate at 6 bar ΔP 1 bar		Nl/min	550	1100	2150	4600
Installation			In any position (vertical assembly is not recommended for bistable valves subjected to vibration)			
Fluid			Filtered air without lubrication; lubrication, if used, must be continuous.			
			For series 70 LT (low-temperature) versions, it is recommended to use of perfetamente dried air.			
Recommended lubricant			ISO and UNI FD 22			
			For series 70 LT (low-temperature) it is not expected to be used with lubricated air.			
Maximum coil nut torque		Nm	1			
Compatibility with oils			See **chapter Z1**			

COMPONENTS SERIES 70

① VALVE BODY: Aluminium
② CONTROL/END CAP: plastic
③ SPOOL: chemically nickel-plated aluminium
④ DISTANCE PLATES: plastic
⑤ GASKETS: NBR
⑥ PISTONS: Hostaform®
⑦ PISTON GASKET: NBR
⑧ FILTER: plastic
⑨ SPRINGS: special steel
⑩ OPERATOR: Brass pipe - Stainless steel core



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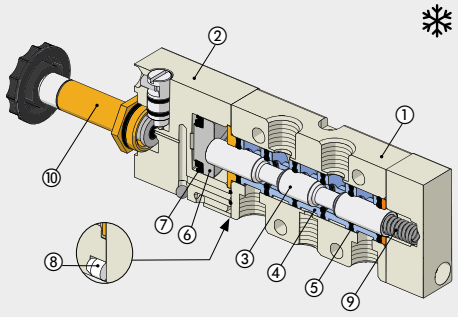
COMPONENTS SERIES 70 LT (LOW TEMPERATURE)

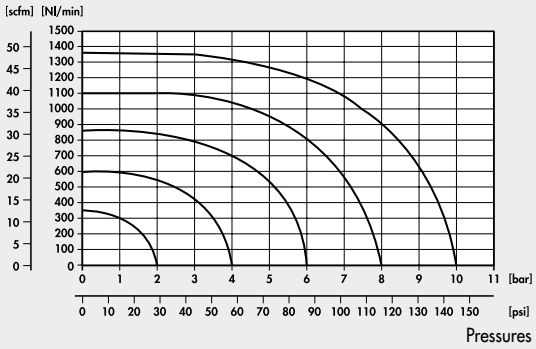
① ALVE BODY: aluminium
② CONTROL/END CAP: aluminium
③ SPOOL: chemically nickel-plated aluminium
④ DISTANCE PLATES: plastic
⑤ GASKETS: HNBR
⑥ PISTONS: aluminium
⑦ PISTON GASKET: HNBR
⑧ FILTER: plastic
⑨ SPRINGS: special steel
⑩ OPERATOR: brass pipe - Stainless steel core
(version specific for low-temperature applications)



FLOW CHARTS

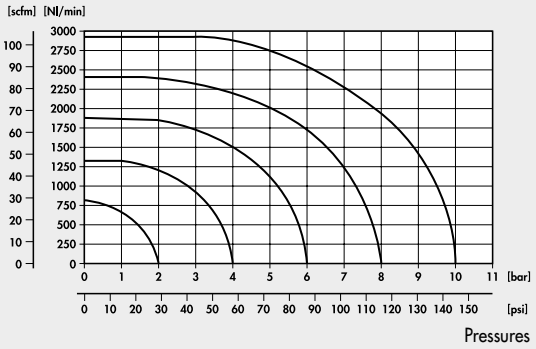
VALVES SERIES 70 1/8"

Flow rates



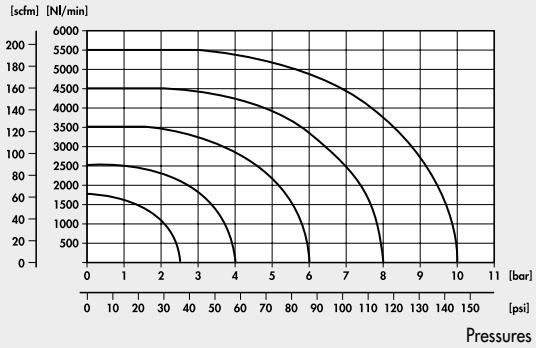
VALVES SERIES 70 1/4"

Flow rates



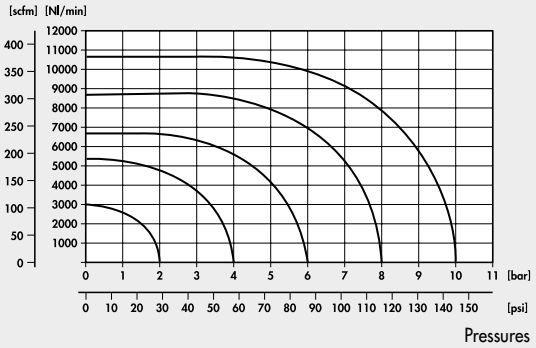
VALVES SERIES 70 3/8"

Flow rates



VALVES SERIES 70 1/2"

Flow rates



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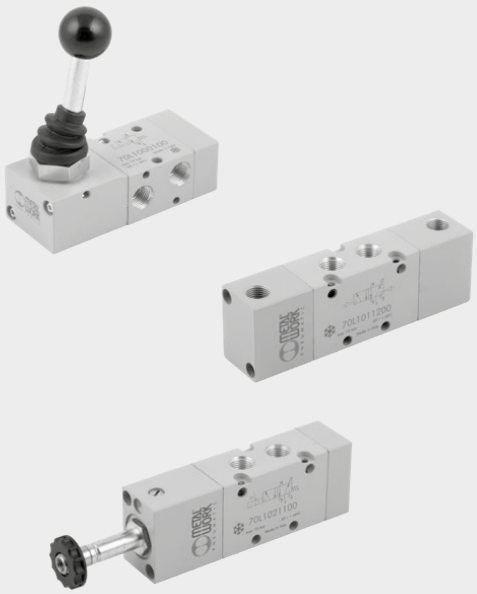
VALVES SERIES 70 LT (LOW TEMPERATURE)

TECHNICAL DATA		1/8"	1/4"	3/8"
Operating pressure standard	bar			
hand operated		Vacuum to 10		
pneumatic and solenoid/pneumatic	t = -40°C to -10°C	5 to 10		
	t = -10°C to +60°C	3 to 10		
Operating temperature range	°C	−40 to +60		
Nominal diameter	mm	5	7.5	13.3
Conductance C	Nl/min · bar	121.43	264.26	505.52
Critical ratio b	bar/bar	0.32	0.27	0.32
Flow rate at 6 bar ΔP 0.5 bar	Nl/min	400	750	1560
Flow rate at 6 bar ΔP 1 bar	Nl/min	550	1100	2150
PNEUMATIC				
Minimum pilot pressure	bar			
t = -40°C to -10°C		5		
t = -10°C to +60°C		3		
TRA / TRR monostable at 6 bar (at 20°C)	ms	6/15	7/15	5/28
TRA / TRR bistable at 6 bar (at 20°C)	ms	7/7	7/7	13/13
SOLENOID/PNEUMATIC				
TRA / TRR monostable at 6 bar (at 20°C)	ms	15/35	19/45	21/72
TRA / TRR bistable at 6 bar (at 20°C)	ms	20/20	21/21	18/18
Coil voltage values		12; 24 VDC		
		24; 110; 220V AC 50/60Hz		
Power	t = -40°C to -10°C	5 W (DC) - 5 VA (AC)		
	t = -10°C to +60°C	2 W (DC) - 3.5 VA (AC)		
Voltage tolerance	%	-10 to +15		
Insulation class		F 155		
Maximum coil nut torque	Nm	1		
Hand operator		Bistable		

Notes: after a long stop and with very low temperatures the movement of the first drives may be slower. It recommends the use of perfectly dry air.

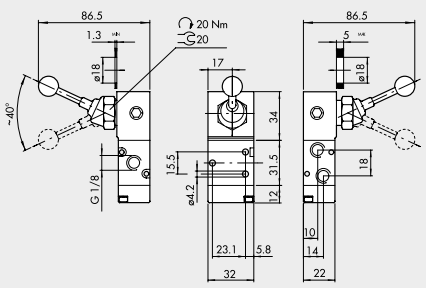


SYNOPTIC, SIZES AND VERSIONS

P N V FAMILY	2 DIMENSIONS	3 FUNCTION	P N OPERATORS 14	S RESETTING (12)	OO FURTHER DETAILS	L T
MAV manual valves	**2** 1/8"	**3** 3/2	**LE** leva 90°	**S** mechanical springs	**OO** no indication	**LT** low temperature
PNV pneumatic valves	**3** 1/4"	**5** 5/2	**PN** pneumatic	**B** bistable	**NC** normally closed	
SOV solenoid/ pneumatic	**C** 3/8"	**6** 5/3	**SO** solenoid	**O** stable for 5/3	**NO** normally open	
					CC closed centres	
					OC open centres	
					PC pressure centres	

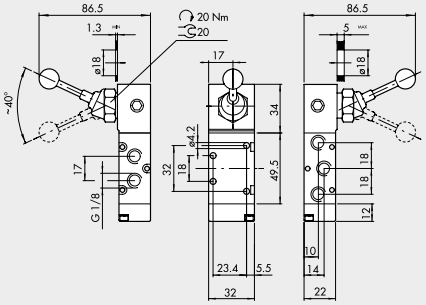
VALVES SERIES 70 LT, HAND OPERATED (LOW TEMPERATURE)

90° LEVER 3/2 1/8"



Symbol		Code	Abbrev.	Weight [g]
	❄	**70L1000100**	MAV 23 LES NC LT	184
	❄	**70L1000200**	MAV 23 LEB OO LT	187

90° LEVER 5/2 1/8"



Symbol		Code	Abbrev.	Weight [g]
	❄	**70L1000300**	MAV 25 LES OO LT	210
	❄	**70L1000400**	MAV 25 LEB OO LT	213

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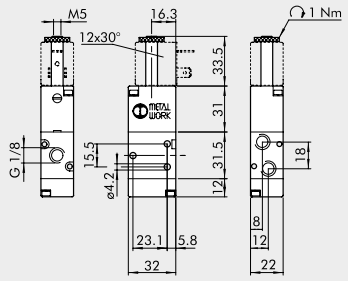
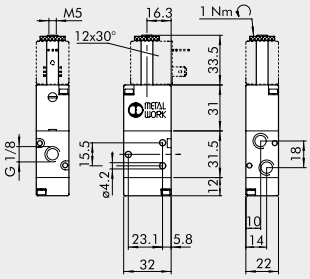
VALVES SERIES 70 LT, SOLENOID/PNEUMATIC (LOW TEMPERATURE)

MONOSTABLE 3/2 NO 1/8"



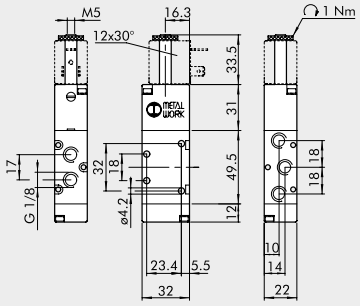
Symbol	Code	Abbrev.	Weight [g]
	70L1020400	SOV 23 SOS NO LT	147

MONOSTABLE 3/2 NC 1/8"



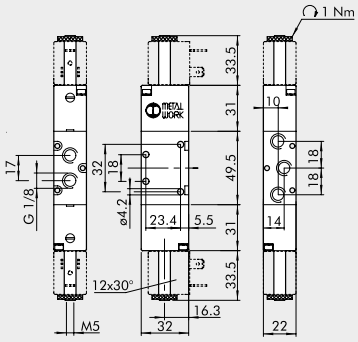
Symbol	Code	Abbrev.	Weight [g]
	70L1020200	SOV 23 SOS NC LT	147

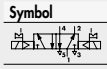
MONOSTABLE 5/2 1/8"



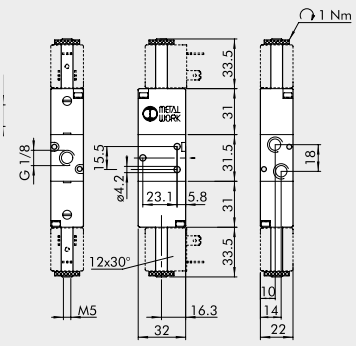
Symbol	Code	Abbrev.	Weight [g]
	70L1021100	SOV 25 SOS OO LT	175

BISTABLE 5/2 1/8"



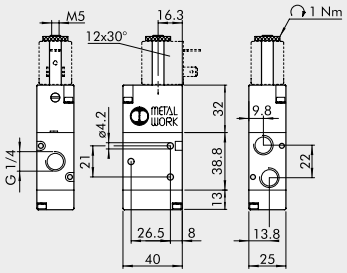
Symbol	Code	Abbrev.	Weight [g]
	70L1021200	SOV 25 SOB OO LT	228

BISTABLE 3/2 1/8"



Symbol	Code	Abbrev.	Weight [g]
	70L1020100	SOV 23 SOB OO LT	203

MONOSTABLE 3/2 NO 1/4"



Symbol	Code	Abbrev.	Weight [g]
	70L2020400	SOV 33 SOS NO LT	230

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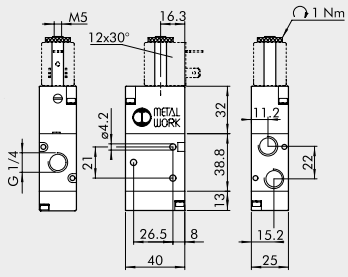
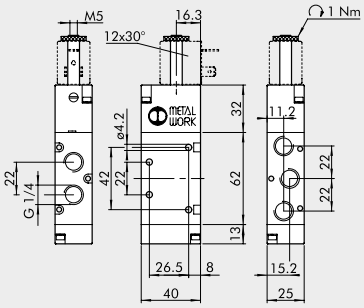
MONOSTABLE 3/2 NC 1/4"



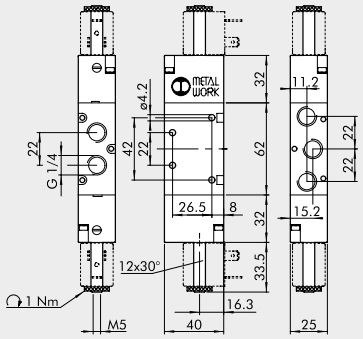
Symbol	Code	Abbrev.	Weight [g]
	70L2020200	SOV 33 SOS NC LT	230

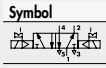
MONOSTABLE 5/2 1/4"



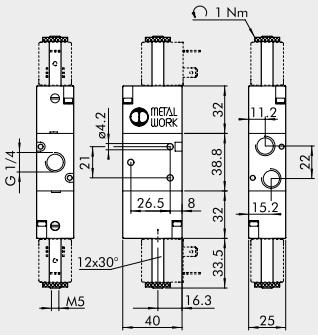
Symbol	Code	Abbrev.	Weight [g]
	70L2021100	SOV 35 SOS OO LT	278

BISTABLE 5/2 1/4"



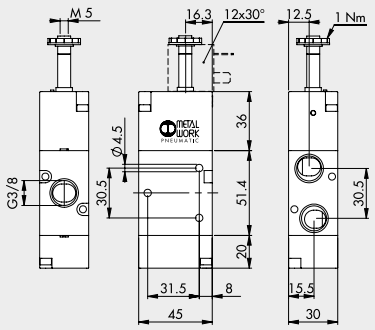
Symbol	Code	Abbrev.	Weight [g]
	70L2021200	SOV 35 SOB OO LT	332

BISTABLE 3/2 1/4"



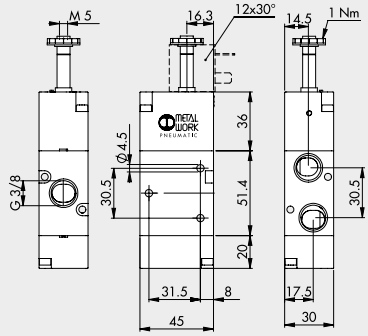
Symbol	Code	Abbrev.	Weight [g]
	70L2020100	SOV 33 SOB OO LT	286

MONOSTABLE 3/2 NO 3/8"



Symbol	Code	Abbrev.	Weight [g]
	70L4020400	SOV C3 SOS NO LT	358

MONOSTABLE 3/2 NC 3/8"



Symbol	Code	Abbrev.	Weight [g]
	70L4020200	SOV C3 SOS NC LT	358

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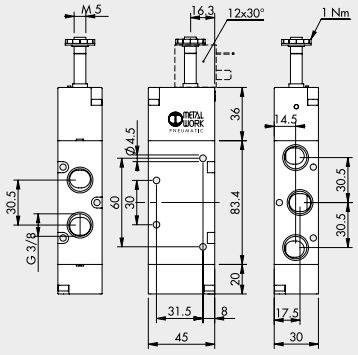
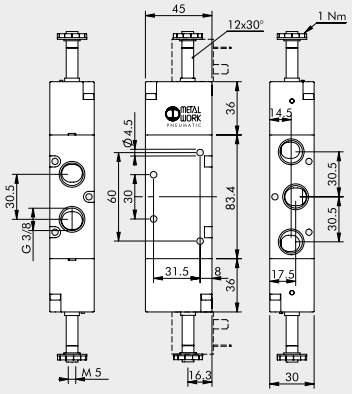
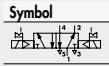
MONOSTABLE 5/2 3/8"



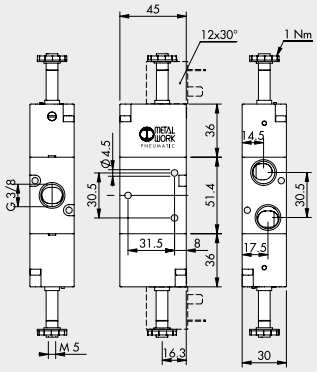
Symbol		Code	Abbrev.	Weight [g]
	❄	**70L4021100**	SOV C5 SOS OO LT	460

BISTABLE 5/2 3/8"



Symbol		Code	Abbrev.	Weight [g]
	❄	**70L4021200**	SOV C5 SOB OO LT	526

BISTABLE 3/2 3/8"



Symbol		Code	Abbrev.	Weight [g]
	❄	**70L4020100**	SOV C3 SOB OO LT	426

NOTES

ACCESSORIES

COILS AND CONNECTORS

Refer to page **B1**.60 for coils and connectors

For temperatures T <-10 ° C it is necessary to use coils side 22 mm from 5 W or 5 VA . (see page B1.77)

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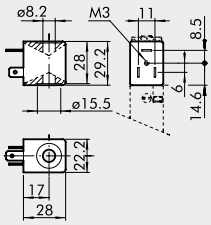
COILS AND CONNECTORS FOR SERIES 70, NAMUR AND SERIES BASIC VALVES

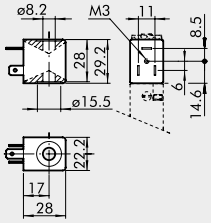
COILS SIDE 22 mm



- Voltage tolerance: -10% + 15%
- Insulation class: F155
- Degree of protection: IP65 DIN 40050 with connector
- Avoid prolonged exposure to atmospheric agents
- Coil temperature 100% ED: 55°C at 20°C ambient temperature
- According to Atex 2014/34/EU rule, group 2, category 3 GD
- Electrical connection DIN 43650 B-IND

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000151	Coil 22 Ø 8 BA 2W-12VDC	12Vcc	2W	2W
W0215000101	Coil 22 Ø 8 BA 2W-24VDC	24Vcc	2W	2W
W0215000111	Coil 22 Ø 8 BA 3.5VA-24VAC	24V 50/60Hz	5.3VA	3.5VA
W0215000121	Coil 22 Ø 8 BA 3.5VA-110VAC	110V 50/60Hz	5.3VA	3.5VA
W0215000131	Coil 22 Ø 8 BA 3.5VA-220VAC	220V 50/60Hz	5.3VA	3.5VA

"UL" AND "CSA" COILS 22 mm

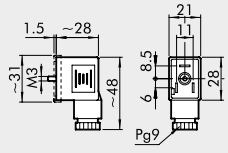


c UL us

- Voltage tolerance: –10% to + 15%
- Insulation class: F155
- Degree of protection: IP65 EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents
- Coil temperature 100% ED: 55°C at 20°C ambient temperature
- Electrical connection DIN 43650 B-IND

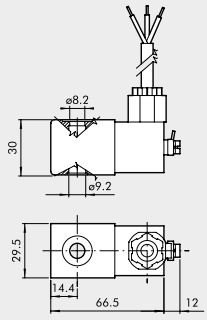
Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000251	Coil 22 Ø 8 BA 2W-12VDC UR	12Vcc	2W	2W
W0215000201	Coil 22 Ø 8 BA 2W-24VDC UR	24Vcc	2W	2W
W0215000211	Coil 22 Ø 8 BA 3.5VA-24VAC UR	24V 50/60Hz	5.3VA	3.5VA
W0215000221	Coil 22 Ø 8 BA 3.5VA-110VAC UR	110V 50/60Hz	5.3VA	3.5VA
W0215000231	Coil 22 Ø 8 BA 3.5VA-220VAC UR	220V 50/60Hz	5.3VA	3.5VA

CONNECTOR FOR COILS SIDE 22 mm DIN 43650 B-IND



Code	Tipo	Colour	Ø Cable
W0970510011	Standard	Black	PG9
W0970510012	LED 24V	Transparent	PG9
W0970510013	LED 110V	Transparent	PG9
W0970510014	LED 220V	Transparent	PG9
W0970510015	LED + VDR 24V	Transparent	PG9
W0970510016	LED + VDR 110V	Transparent	PG9
W0970510017	LED + VDR 220V	Transparent	PG9
W0970510070	Atex II 2 GD	Black	PG9

KIT COIL EEXM



Code	Description
0227606913	Kit for coil 30 24VDC EEXMT5 cable 3 m
0227606915	Kit for coil 30 24VDC EEXMT5 cable 5 m
0227608013	Kit for coil 30 24VAC EEXMT5 cable 3 m
0227608015	Kit for coil 30 24VAC EEXMT5 cable 5 m
0227608023	Kit for coil 30 110VAC EEXMT5 cable 3 m
0227608025	Kit for coil 30 110VAC EEXMT5 cable 5 m
0227608033	Kit for coil 30 230VAC EEXMT5 cable 3 m
0227608035	Kit for coil 30 230VAC EEXMT5 cable 5 m

According to Atex 2014/34/EU rule: Ex II 2G Ex mb IIC T4/T5 Gb
Ex II 2D Ex tb IIIC T130/T95 °C IP66 Db

N.B.: Supplied complete with adapter for Ø8 mm sleeve.

N.B.: It's not possible to mount valves having these coils on bases or on manifolds, because the width of 29.5 mm is higher than the distance between the valves. Special bases can be manufactured on request.

KIT COILS SIDE 22 IP65

Code	Description
0222100100	Kit for coils 22 - IP65

Improved IP65 protection, even after prolonged exposure to atmospheric agents.
Applicable to valves with a technopolymer control.

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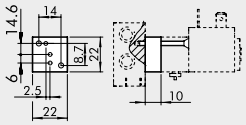
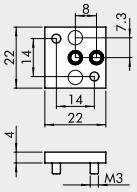
NC/NO ADAPTER FOR PIV.T VALVES



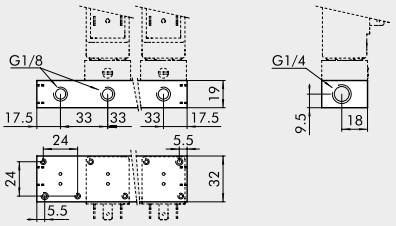
Code	Description	Abbrev.	Weight [g]
W0400101190	NC/NO adapter	I-9000	15

BASE BLANKING PLATE FOR PIV.T VALVES, UNUSED POSITIONS



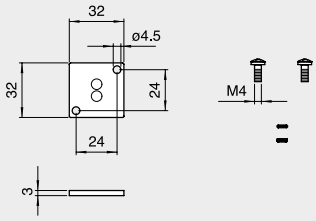
Code	Description	Abbrev.	Weight [g]
W0400112000	Blanking plate	B6000	5

MULTIPLE BASES FOR PIV.B VALVES



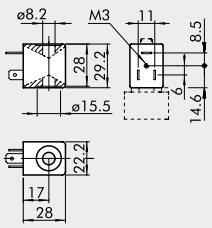
Code	Description	Abbrev.	Weight [g]
W0400101201	Base 1 position	B4001	42
W0400101202	Base 2 positions	B4002	94
W0400101203	Base 3 positions	B4003	142
W0400101204	Base 4 positions	B4004	188
W0400101205	Base 5 positions	B4005	234
W0400101206	Base 6 positions	B4006	280
W0400101207	Base 7 positions	B4007	326
W0400101208	Base 8 positions	B4008	372
W0400101209	Base 9 positions	B4009	418

BASE BLANKING PLATE FOR PIV.B VALVES, UNUSED POSITIONS



Code	Description	Weight [g]
W0400112001	Blanking plate	14

COILS, SIDE 22 mm FOR PIV.I SOLENOID VALVES, OPERATOR Ø 8



- Voltage tolerance: –10 to +15%
- Insulation class: F155
- Degree of protection: IP65 – EN60529 with connector
- Avoid prolonged exposure to the atmospheric agents.
- Maximum coil temperature at 100% use: 70°C at 20° ambient temperature
- According to Atex 2014/34/EU rule, group 2, category 3 GD
- Electrical connection DIN 43650 B-IND

Code	Abbrev.	Nominal voltage	Absorption	
			Inrush	Holding
W0215000051	Coil 22 Ø 8 5W-12VDC	12Vcc	5W	5W
W0215000001	Coil 22 Ø 8 5W-24VDC	24Vcc	5W	5W
W0215000011	Coil 22 Ø 8 5VA-24VAC	24V 50/60Hz	8VA	5VA
W0215000021	Coil 22 Ø 8 5VA-110VAC	110V 50/60Hz	8VA	5VA
W0215000031	Coil 22 Ø 8 5VA-220VAC	220V 50/60Hz	8VA	5VA

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Accessories

	Art. No.	Type No.
Solenoid, 22 mm x Ø 8 mm, electrical connection equipment type B, 24 V AC, 50/60 Hz, 5 VA	118633	400-517-01
Solenoid, 22 mm x Ø 8 mm, electrical connection equipment type B, 110 V AC, 50/60 Hz, 5 VA	118634	400-517-07
Solenoid, 22 mm x Ø 8 mm, electrical connection equipment type B, 230 V AC, 50/60 Hz, 5 VA	118635	400-517-17
Solenoid, 22 mm x Ø 8 mm, electrical connection equipment type B, 12 V DC, 5 W	118636	400-517-41
Solenoid, 22 mm x Ø 8 mm, electrical connection equipment type B, 24 V DC, 5 W	118637	400-517-42
plug connector, 22 mm, type B, housing standard black, with seal and screw	117313	1920.9P
plug connector with LED, 230 V, 22 mm, type B, housing transparent, with seal and screw	117314	1920.9PL.17
plug connector with LED, 24 V, 22 mm, type B, housing transparent, with seal and screw	117316	1920.9PL.42
plug connector with LED, varistor 230 V, 22 mm, type B, housing transparent, with seal and screw	117317	1920.9PLV17
plug connector with LED, varistor 24 V, 22 mm, type B, housing transparent, with seal and screw	117318	1920.9PLV42
plug connector, 22 mm, type B, housing standard black, ATEX II 2 GD, with seal and screw	151011	1920.9PL110
plug connector with LED, 110 V, 22 mm, type B, housing transparent, with seal and screw	129849	1920.9PLV110
Supply strip for the way valves, mounting bracket set, height 120 mm, for valves connection G 1/4, exhaust/supply connection G 3/8	106607	518.120-14
Supply strip for the way valves, mounting bracket set, height 60 mm, for valves connection G 1/4, exhaust/supply connection G 3/8	106608	518.60-14
Supply strip for the way valves, mounting bracket set, height 30 mm, for valves connection G 1/4, exhaust/supply connection G 3/8	106609	518.30-14
Supply strip for the way valves, supply strip with 2 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106616	519.02-14
Supply strip for the way valves, supply strip with 3 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106617	519.03-14
Supply strip for the way valves, supply strip with 4 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106618	519.04-14
Supply strip for the way valves, supply strip with 5 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106619	519.05-14
Supply strip for the way valves, supply strip with 6 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106620	519.06-14
Supply strip for the way valves, supply strip with 7 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106621	519.07-14
Multi-base plate for the way valves, with 2 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106632	520.02-14
Multi-base plate for the way valves, with 3 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106633	520.03-14
Multi-base plate for the way valves, with 4 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106634	520.04-14
Multi-base plate for the way valves, with 5 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106635	520.05-14
Multi-base plate for the way valves, with 6 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106636	520.06-14
Multi-base plate for the way valves, with 7 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106637	520.07-14
Multi-base plate for the way valves, with 8 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106638	520.08-14

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Accessories

	Art. No.	Type No.
Multi-base plate for the way valves, with 9 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106639	520.09-14
Multi-base plate for the way valves, with 10 valve positions, for valves connection G 1/4, exhaust/supply connection G 3/8	106640	520.10-14
Modular base, for valves connection G 1/4, manifold base system for valves series 70/basic	146739	0226005150
Terminal outlet w/o seals, for valves G 1/4, exhaust/supply G 1/4, manifold base system for valves series 70/basic	146740	0226005201
Terminal inlet with seals, for valves G 1/4, exhaust/supply G 1/4, manifold base system for valves series 70/basic	146741	0226005200
Terminal intermediate/upper supply, for valves G 1/4, exhaust/supply G 1/4, manifold base system for valves series 70/basic	146742	0226005300

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