M&M international

spirax sarco Engineering Group

solenoid valves

The ultimate Technology for fluid control

ISO 9001 Certified Quality System

COMPANY
WITH QUALITY SYSTEM
CERTIFIED BY DNV
=ISO 9001/2000=

European
Community
Conformity

Underwriters
Laboratories
Quality
Certificate

The ultimate Technology for fluid control

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means:

- Working with a staff of qualified professionals
- Enjoying the benefits of the most advanced technological research
- Quality at competitive price
- Warranty of a company conforming to the rigorous ISO 9001/2000 requirements
- Reliability of a 30-year experience on international markets
- To partner with a company belonging to a multinational group

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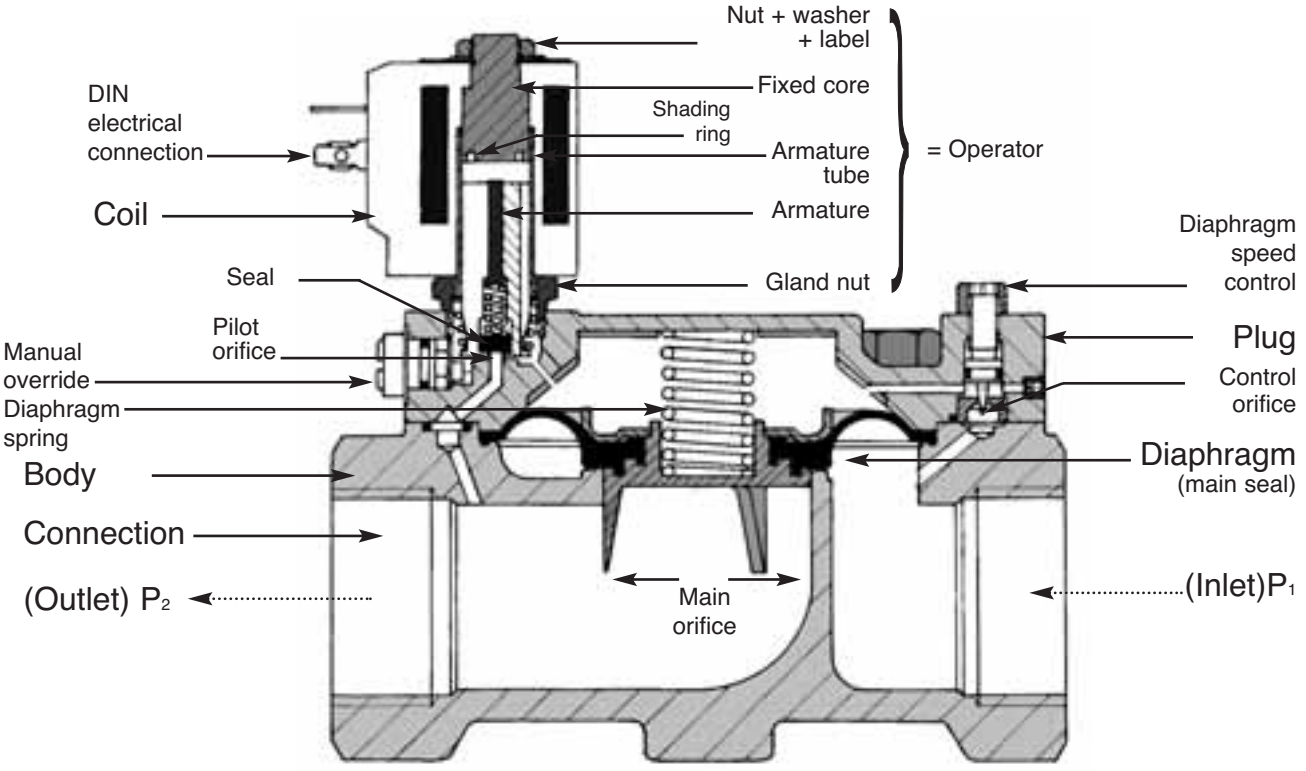
M&M INTERNATIONAL SOLENOID VALVES

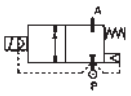
Scheme of an M&M International solenoid valve components



Benefits of M&M International solenoid valves

Robust contruction for industrial use Stainelss steel orifice	→	High reliability Long life
Stainless steel operators with low residual magnetism according to DIN 1.4105 and AISI 430F	→	Corrosion resistance High performance
High quality seal materials NBR, FKM, EPDM, PTFE, Rulon, Ruby	→	Maximum compatibility with fluids
Fully interchangeable coils with a wide range of AC and DC voltages	→	High flexibility with reduced stock
Coils orientability at 360°	→	Easy and quick installation
Coils tested 100% in compliance with the current EC directives. On request conformity to the most relevant international standards	→	CE UL
Development and execution of special projects	→	Customer oriented solutions

2/2 WAY PILOT OPERATED SOLENOID VALVE, G 1/4" ÷ G 1"



normally closed

TYPE: B203/204/205/206/222

TECHNICAL SPECIFICATIONS

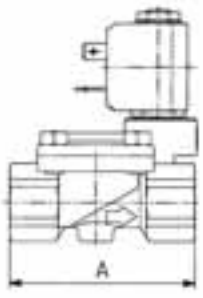
Media: water, oil, air,	
Media temperature: -10°C … +90°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Operator material: stainless steel	
Operator seal material: FKM	
Seal and Diaphragm material: NBR	
Coil power:	AC 10VA (holding)
	AC 16VA (inrush)
	DC 7W
Protection class: IP 65 (with connector)	

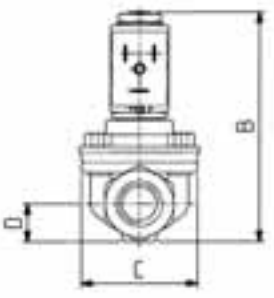
OPTIONS

- Normally open (Ex. code RB206DBY)
- Manual override (Ex. code B204DBZM)
- Speed control screw (only for B206DBYV and B222DBYV)
- EPDM seal for air and hot water MAX 120°C (Ex. code B204DEZ)
- FKM seal for air, water, oil MAX 130°C (Ex. code B204DVZ)
- Version with operator ø 14,5 and coil type 7000 available on request (Ex. code D205DBZ)

SELECTION TABLE

VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
B203DBZ	1/4"	13	26	0.3	16	16	2250	24/dc
B204DBZ	3/8"	13	55	0.3	16	16	2200	24/50 – 60
B205DBZ	1/2"	13	63	0.3	16	16	2400	110/50 – 120/60
B206DBX compact	3/4"	21	90	0.3	16	16	2600	200/50 – 220/60
B206DBY	3/4"	25	183	0.3	16	16	2700	230/50 – 240/60
B222DBY	1"	25	216	0.3	16	16		

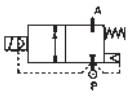




DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4"	67	90	44	15	0.4
3/8"	67	90	44	15	0.4
1/2"	67	90	44	15	0.4
3/4" compact	82	105	50	20.25	0.6
3/4"	96	115	70	23	1.2
1"	96	115	70	23	1.2

2/2 WAY PILOT OPERATED SOLENOID VALVE, G 1 1/4" ÷ G 2"



normally closed

TYPE: D223/224/225

TECHNICAL SPECIFICATIONS

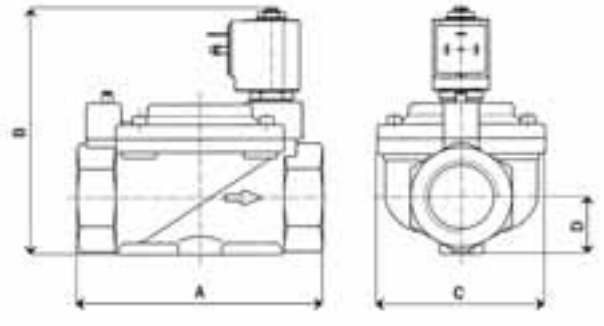
Media: water, oil, air,	
Media temperature: -10°C … +90°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Operator material: stainless steel	
Operator seal material: FKM	
Seal and diaphragm material: NBR	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	
Speed control screw as standard	

OPTIONS

Normally open (Ex. code RD224DBK)
Manual override (Ex. code D223DBKM)
EPDM seal for air and hot water MAX 120°C (Ex. code D223DEK)
FKM seal for air, water, oil MAX 130°C (Ex. code D223DVK)

SELECTION TABLE

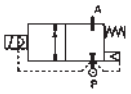
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D223DBK	1 1/4"	40	420	0.5	16	16	7250	24/dc
D224DBK	1 1/2"	40	480	0.5	16	16	7200	24/50 – 60
D225DBJ	2"	50	600	0.5	16	16	7400	110/50 – 120/60
							7600	200/50 – 220/60
							7700	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1 1/4"	140	140	96	31	2.8
1 1/2"	140	140	96	31	2.8
2"	168	158	112	39	3.9

2/2 WAY PILOT OPERATED SOLENOID VALVE, G 3/8" ÷ G 3/4", HIGH PRESSURE



normally closed

TYPE: D232/233/234

TECHNICAL SPECIFICATIONS

Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Operator seal material: Ruby	
Diaphragm material: FKM	
Main seal material: PTFE	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

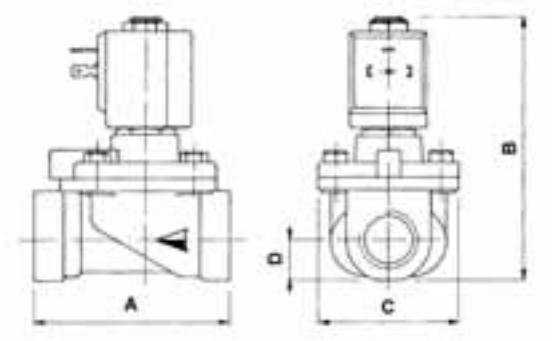
OPTIONS

Normally open (Ex. code RD232DTW);
max. OPD: AC 40 bar - DC 25 bar

FKM seal for air, water, oil MAX 130°C (Ex. code D233DVW)

SELECTION TABLE

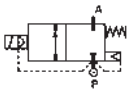
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D232DTW	3/8"	15.5	31	1	50	50	7250	24/dc
D233DTW	1/2"	15.5	35	1	50	50	7200	24/50 – 60
D234DTW	3/4"	15.5	37	1	50	50	7400	110/50 – 120/60
							7600	200/50 – 220/60
							7700	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
3/8"	86	115	50	17.5	0.9
1/2"	86	115	50	17.5	0.9
3/4"	86	115	50	17.5	0.9

2/2 WAY PILOT OPERATED SOLENOID VALVE, G 1/4" ÷ G 1/2"



normally closed

TYPE: D264/265/266

TECHNICAL SPECIFICATIONS

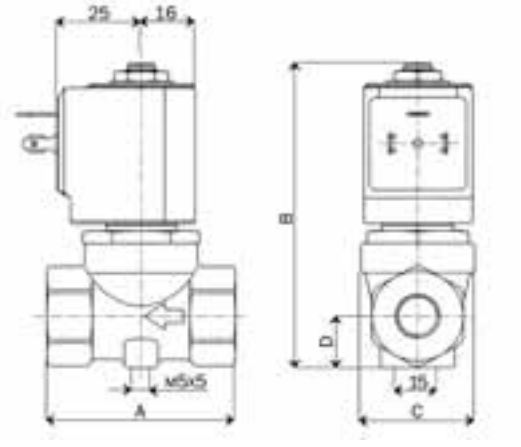
Media: water, oil, air	
Media temperature: -10°C … +90°C	
Ambient temperatue: -10°C …+50°C	
Body material: brass (CW617N EN 12165)	
Operator material: stainless steel	
Operator seal material: FKM	
Diaphragm material: NBR	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class:IP 65 (with connector)	

OPTIONS

FKM seal for air, water, oil MAX 130°C (Ex. code D266DVU)
EPDM seal for air and hot water MAX 120°C (Ex. code D266DEU)

SELECTION TABLE

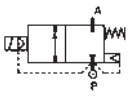
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D264DBU	1/4"	10.5	21	0.1	16	7	7250	24/dc
D265DBU	3/8"	10.5	24	0.1	16	7	7200	24/50 – 60
D266DBU	1/2"	10.5	25	0.1	16	7	7400	110/50 – 120/60
							7600	200/50 – 220/60
							7700	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4"	54	89	34	15.5	0.4
3/8"	54	89	34	15.5	0.4
1/2"	54	89	34	15.5	0.4

2/2 WAY PILOT OPERATED VALVE WITH ASSISTED LIFT, G 1/4" ÷ G 1/2"



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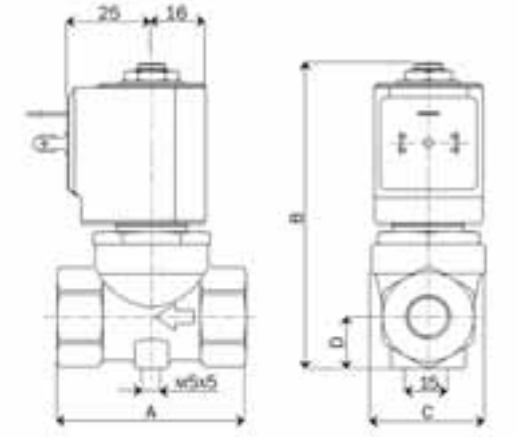
TYPE: D884/885/886

TECHNICAL SPECIFICATIONS

Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Operator material: stainless steel	
Operator seal material: FKM	
Seal and Diaphragm material: FKM	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

SELECTION TABLE

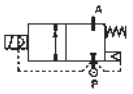
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D884DVU	1/4"	10.5	21	0	16	4.5	7250	24/dc
D885DVU	3/8"	10.5	24	0	16	4.5	7200	24/50 – 60
D886DVU	1/2"	10.5	25	0	16	4.5	7400	110/50 – 120/60
							7600	200/50 – 220/60
							7700	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4"	54	89	34	15.5	0.4
3/8"	54	89	34	15.5	0.4
1/2"	54	89	34	15.5	0.4

2/2 WAY PILOT OPERATED VALVE WITH ASSISTED LIFT, G 1/4” ÷ G 1”



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TYPE: D287/288/289/290/292/293

TECHNICAL SPECIFICATIONS

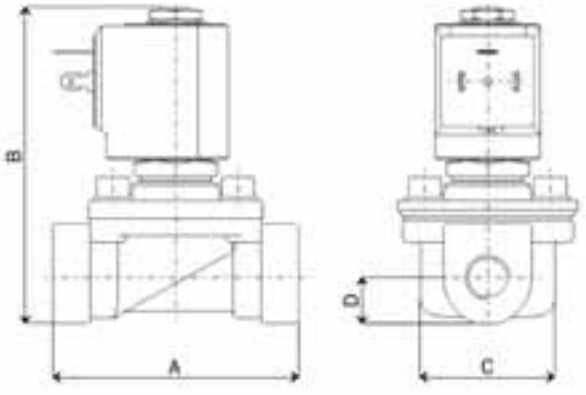
Media: water, oil, air	
Media temperature: -10°C … +90°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Operator material: stainless steel	
Operator seal material: FKM	
Seal and diaphragm material: NBR	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

OPTIONS

- EPDM seal for air and hot water MAX 120°C (Ex. code D288DEW)
- FKM seal for air, water, oil MAX 130°C (Ex. code D287DVW)
- •DC MAX 6 bar x D287÷292 (Ex. code C D287DBW)
- •DC MAX 5 bar x D293 (Ex. code C D293DBY)
- (*) Speed control screw as Standard for type "D293"

SELECTION TABLE

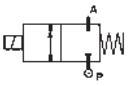
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D287DBW	1/4”	15	50	0	16	•	7250	24/dc
D288DBW	3/8”	15	60	0	16	•	7200	24/50 – 60
D289DBW	1/2”	15	65	0	16	•	7400	110/50 – 120/60
D290DBW	3/4”	15	80	0	16	•	7600	200/50 – 220/60
D292DBW compact	1”	15	85	0	16	•	7700	230/50 – 240/60
D293DBY(*)	1”	25	170	0	16	•		



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4”	75	95	53	14	0.5
3/8”	75	95	53	14	0.5
1/2”	75	95	53	14	0.5
3/4”	80	99	53	18	0.8
1” compact	85	105	53	22	0.8
1”	100	113	70	23	1.3

2/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8"



normally closed

TYPE: B297

TECHNICAL SPECIFICATIONS

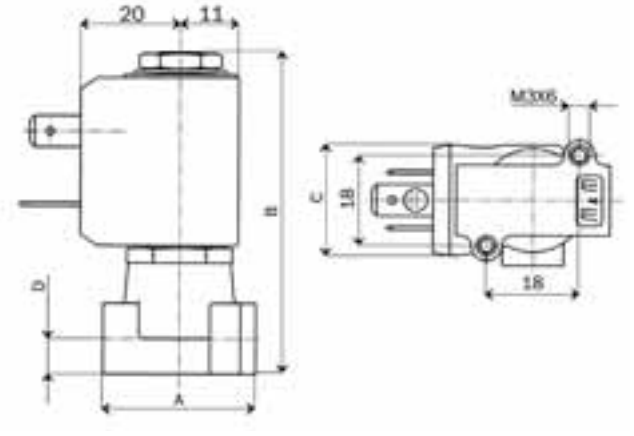
Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: low lead content brass (CW719R EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: foodgrade FKM A80	
Coil power:	AC 10VA (holding)
	AC 16VA (inrush)
	DC 7W
Protection class: IP 65 (with connector)	

OPTIONS

- Normally open (Ex. code RB297DVC)
- Manual override (Ex. code B297DVCM)
- EPDM seal for air and hot water MAX 120°C (Ex. code B297DEC)
- NPT connection on request (Ex. code B297DVEN)

SELECTION TABLE

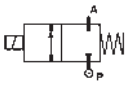
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
B297DVB	1/8"	1.2	0.7	0	20	18	2250	24/dc
B297DVC	1/8"	1.5	1.0	0	18	15	2200	24/50 – 60
B297DVE	1/8"	2.0	1.9	0	12	9	2400	110/50 – 120/60
B297DVG	1/8"	2.5	2.7	0	5	2.5	2600	200/50 – 220/60
B297DVH	1/8"	3.0	3.5	0	3	1	2700	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	30	64	22	7	0.15

2/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8" - G 1/4"



normally closed

TYPE: D262/263

TECHNICAL SPECIFICATIONS

Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: FKM	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

OPTIONS

Normally open (Ex. code RD263DVG)

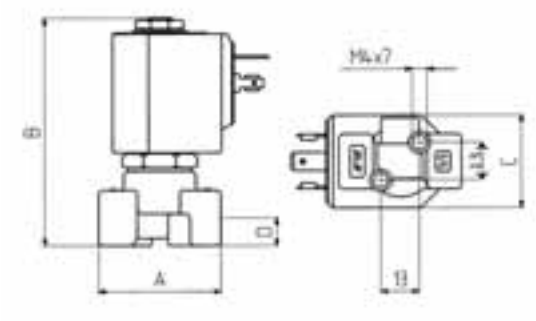
Manual override (Ex. code D262DVHM)

EPDM seal for air and hot water MAX 120°C (Ex. code D262DEH)

RUBY seal -10°C +180°C for high temperature with class "H" coils (Ex. code D262DRC 7201)

SELECTION TABLE

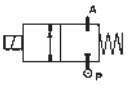
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D262DVA	1/8"	1.0	0.5	0	30	30	7250	24/dc
D262DVC	1/8"	1.5	1.3	0	24	24	7200	24/50 – 60
D262DVG	1/8"	2.5	3.4	0	18	16	7400	110/50 – 120/60
D262DVH	1/8"	3.0	4.5	0	15	8	7600	200/50 – 220/60
D263DVC	1/4"	1.5	1.3	0	24	24	7700	230/50 – 240/60
D263DVG	1/4"	2.5	3.4	0	18	16		
D263DVH	1/4"	3.0	4.5	0	15	8		
D263DVL	1/4"	4.0	6.0	0	8	5		
D263DVN	1/4"	5.0	7.5	0	5	2,5		
D263DVP	1/4"	6.0	8.5	0	3	1		



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	40	77.5	32	11	0.26
1/4"	40	77.5	32	11	0.26

2/2 WAY DIRECT ACTING SOLENOID VALVE WITH HOSE TAIL



normally closed

TYPE: 244

TECHNICAL SPECIFICATIONS

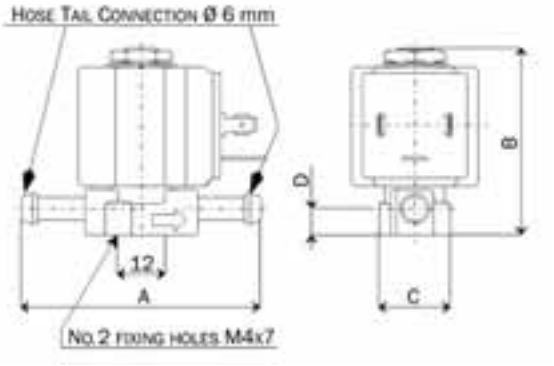
Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Operator material: stainless steel	
Seal material: FKM	
Coil power:	AC 12VA (holding)
	AC 24VA (inrush)
	DC 10W
Protection class: IP 65 (with connector)	

OPTIONS

NBR seal for air, water, oil MAX 90°C (Ex. code 244DBF)

SELECTION TABLE

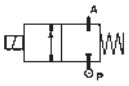
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
244DVF	-	2.2	2	0	10	10	8250	24/dc
							8200	24/50 – 60
							8400	110/50 – 60
							8700	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
-	61.5	50	19	7	0.19

2/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8" - G 1/4"



normally closed

TYPE: 248/249

TECHNICAL SPECIFICATIONS

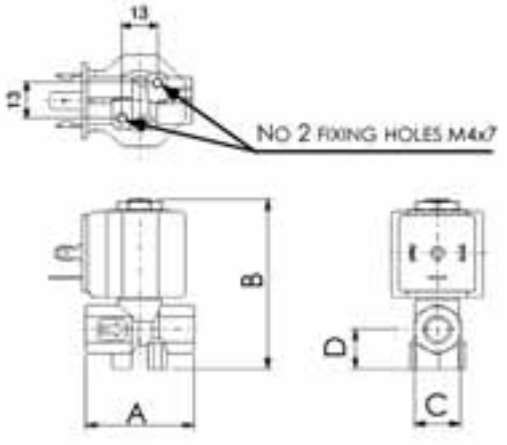
Media: water, oil, air	
Media temperature: -10°C … +120°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Operator material: stainless steel	
Seal material: FKM	
Coil power:	AC 12VA (holding)
	AC 24VA (inrush)
	DC 10W
Protection class: IP 65 (with connector)	

OPTIONS

EPDM seal for air and hot water MAX 120°C (Ex. code 248DEF)

SELECTION TABLE

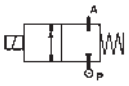
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
248DVD	1/8"	1.7	1.5	0	25	16.5	8250	24/dc
248DVF	1/8"	2.2	2.4	0	15	7.5	8200	24/50 – 60
248DVH	1/8"	3.0	4	0	8	3.5	8400	110/50 – 60
249DVD	1/4"	1.7	1.5	0	25	16.5	8700	230/50 - 240/60
249DVF	1/4"	2.2	2.4	0	15	7.5		
249DVH	1/4"	3.0	4.5	0	8	3.5		
249DVL	1/4"	4.0	6	0	2	0.75		



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	38	62.5	Hex. 17	14.5	0.19
1/4"	38	62.5	Hex. 17	14.5	0.18

2/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/4" ÷ G 1/2"



normally closed

TYPE: D237/238/239

TECHNICAL SPECIFICATIONS

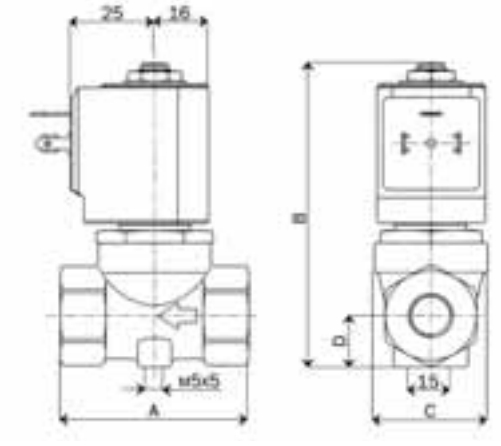
Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Pilot material: stainless steel	
Seal material: FKM	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

OPTIONS

EPDM seal for air and hot water MAX 120°C (Ex. code D239DEU)
NBR seal for air, water, oil MAX 90°C (Ex. code D237DBU)

SELECTION TABLE

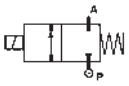
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D237DVU	1/4"	10.5	21	0	0.4	0.2	7250	24/dc
D238DVL	3/8"	4.0	6.0	0	8	5	7200	24/50 – 60
D238DVN	3/8"	5.0	7.5	0	5	2	7400	110/50 – 120/60
D238DVP	3/8"	6.0	8.5	0	3.5	1.1	7600	200/50 – 220/60
D238DVU	3/8"	10.5	24	0	0.4	0.2	7700	230/50 – 240/60
D239DVU	1/2"	10.5	25	0	0.4	0.2		



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4"	54	89	39	15.5	0.4
3/8"	54	89	39	15.5	0.4
1/2"	54	89	39	15.5	0.4

2/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8"



normally closed

TYPE: B298

TECHNICAL SPECIFICATIONS

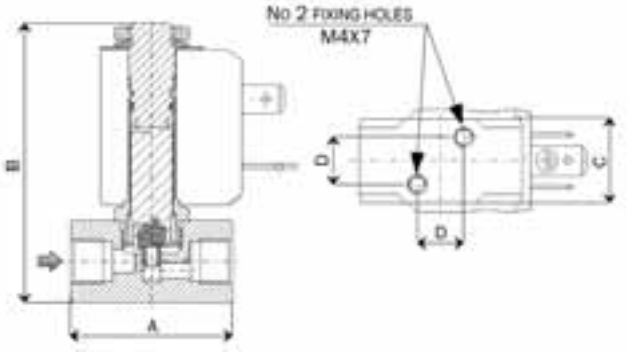
Media: water, oil, air, aggressive fluids	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: stainless steel (AISI 303 EN 10088-3)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: FKM A80 food and beverage compatible	
Coil power:	AC 10VA (holding)
	AC 16VA (inrush)
	DC 7W
Protection class: IP 65 (with connector)	

OPTIONS

1/8" NPT thread (Ex. Code B298DV3N)

SELECTION TABLE

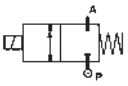
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
B298DV3	1/8"	1.5	1.0	0	18	15	2250	24/dc
B298DV5	1/8"	2.0	1.9	0	12	9	2200	24/50 – 60
B298DV7	1/8"	2.5	2.7	0	8	3	2400	110/50 – 120/60
B298DV8	1/8"	3.0	3.5	0	3	1	2600	200/50 – 220/60
							2700	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	35	60.6	18	10	0.1

2/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8" - G 1/4"



normally closed

TYPE: D298/299

TECHNICAL SPECIFICATIONS

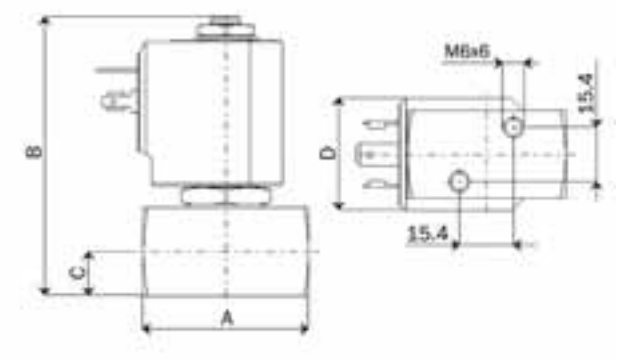
Media: aggressive fluids	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: stainless steel (AISI 303 EN 10088-3)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: FKM	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

OPTIONS

Normally open (Ex. code RD298DVG)
Silver shading ring (Ex. code D298DVCA)
EPDM seal for air and hot water MAX 120°C (Ex. code D299DEG)

SELECTION TABLE

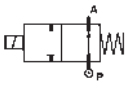
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D298DVC	1/8"	1.5	1.3	0	24	24	7250	24/dc
D298DVG	1/8"	2.5	3.4	0	18	16	7200	24/50 – 60
D298DVH	1/8"	3.0	4.5	0	15	8	7400	110/50 – 120/60
D299DVC	1/4"	1.5	1.3	0	24	24	7600	200/50 – 220/60
D299DVG	1/4"	2.5	3.4	0	18	16	7700	230/50 – 240/60
D299DVH	1/4"	3.0	4.5	0	15	8		
D299DVL	1/4"	4.0	6.0	0	8	5		
D299DVN	1/4"	5.0	7.5	0	5	2		



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	44	78.5	12.5	32	0.36
1/4"	44	78.5	12.5	32	0.36

2/2 WAY DIRECT ACTING SOLENOID VALVE, G1/4"



normally open

TYPE: RD236

TECHNICAL SPECIFICATIONS

Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Main seal material: FKM	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

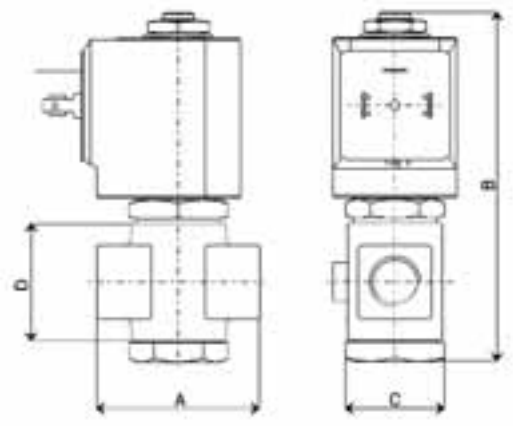
OPTIONS

EPDM seal for air and hot water MAX 120°C (Ex. code RD236DEC)

RUBY seal -10°C +180°C for high temperature with class "H" coils (Ex. code RD236DRH 7201)

SELECTION TABLE

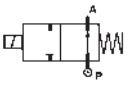
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
RD236DVA	1/4"	1.0	0.5	0	30	30	7250	24/dc
RD236DVC	1/4"	1.5	1.3	0	20	20	7200	24/50 – 60
RD236DVG	1/4"	2.5	2.8	0	15	15	7400	110/50 – 120/60
RD236DVH	1/4"	3.0	3.5	0	12	12	7600	200/50 – 220/60
RD236DVM	1/4"	4.5	5.5	0	5	5	7700	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4"	42	89	24.5	30.3	0.25

2/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8"



normally open

TYPE: RB214

TECHNICAL SPECIFICATIONS

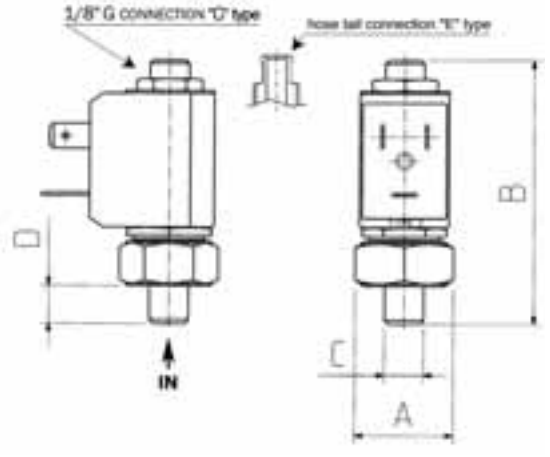
Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C …+50°C	
Body material: low lead content brass (CW719R EN 12165)	
Operator material: stainless steel	
Main seal material: foodgrade FKM A80	
Coil power:	AC 10VA (holding)
	AC 16VA (inrush)
	DC 7W
Protection class: IP 65 (with connector)	

OPTIONS

- EPDM seal for air and hot water MAX 120°C (Ex. code RB214CED)
- Armature tube with hose tail Ø 6 mm (Ex. code RB214EVD)
- Electroless nickel plating treatment (Ex. code RB214CVDK)

SELECTION TABLE

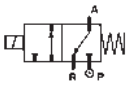
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
RB214CVD	1/8"	1.7	1.2	0	14	14	2250	24/dc
							2200	24/50 – 60
							2400	110/50 – 120/60
							2600	200/50 – 220/60
							2700	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	21	65.7	1/8"	9.5	-

3/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8"



normally closed

TYPE: B397

TECHNICAL SPECIFICATIONS

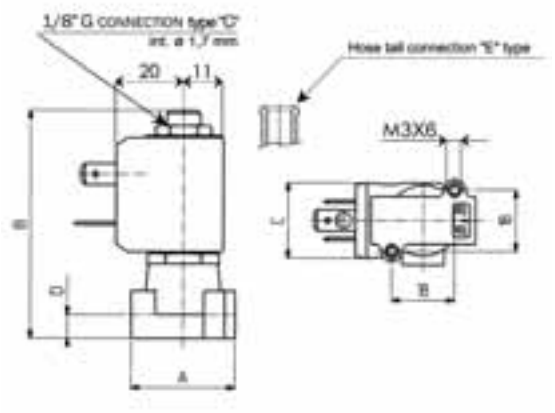
Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: low lead content brass (CW719R EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: foodgrade FKM A80	
Coil power:	AC 10VA (holding)
	AC 16VA (inrush)
	DC 7W
Protection class: IP 65 (with connector)	

OPTIONS

- Normally open (Ex. code RB397CVE)
- Manual override (Ex. code B397CVBM)
- EPDM seal for air and hot water MAX 120°C (Ex. code B397CEC)
- Armature tube with hose tail Ø 6 mm (Ex. code B397EVE)
- Electroless nickel plating treatment (Ex. code B397CVCK)

SELECTION TABLE

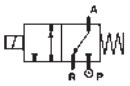
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
B397CVA	1/8”	1.0	0.5	0	18	18	2250	24/dc
B397CVB	1/8”	1.2	0.7	0	15	15	2200	24/50 – 60
B397CVC	1/8”	1.5	1.0	0	10	10	2400	110/50 – 120/60
B397CVE	1/8”	2.0	1.9	0	5	5	2600	200/50 – 220/60
B397CVH	1/8”	3.0	3.5	0	2	2	2700	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8”	30	67	22	7	0.15

3/2 WAY DIRECT ACTING SOLENOID VALVE, FLANGE 32X32



normally closed

TYPE: D301

TECHNICAL SPECIFICATIONS

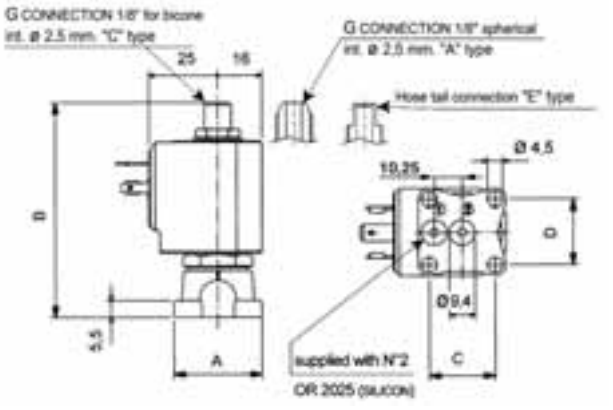
Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: FKM	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class:IP 65 (with connector)	

OPTIONS

Normally open (Ex. code RD301CVG)
Manual override (Ex. code D301AVCM)
EPDM seal for air and hot water MAX 120°C (Ex. code D301CEC)
RUBY seal -10°C +180°C for high temperature with class "H" coils (Ex. code D301ARB 7201)
Armature tube with G connection 1/8" spherical (Ex. code D301AVC)
Armature tube with hose tail ø 6 mm (Ex. code D301EVE)

SELECTION TABLE

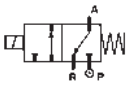
VALVE	Square base	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D301CVC	32x32	1.5	1.3	0	15	15	7250	24/dc
D301CVE	32x32	2.0	2.2	0	10	10	7200	24/50 – 60
D301CVG	32x32	2.5	3.4	0	7	7	7400	110/50 – 120/60
							7600	200/50 – 220/60
							7700	230/50 – 240/60



DIMENSIONS & WEIGHTS

square base	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
32x32	32	77	24	24	0.25

3/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8" - G 1/4"



normally closed

TYPE: D362/363

TECHNICAL SPECIFICATIONS

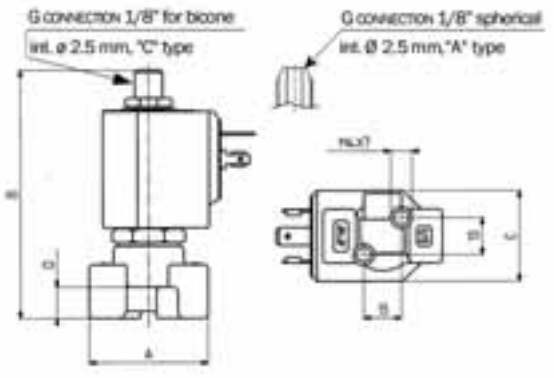
Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: FKM	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

OPTIONS

- Normally open (Ex. code RD362CVC)
- Manual override (Ex. code D362CVGM)
- EPDM seal for air and hot water MAX 120°C (Ex. code D362CEC)
- RUBY seal -10°C+180°C for high temperature with class "H" coils (Ex. code D363ARE 7201)
- Armature tube with G connection 1/8" spherical (Ex. code D362AVC)

SELECTION TABLE

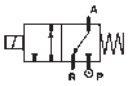
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D362CVC	1/8"	1.5	1.3	0	15	15	7250	24/dc
D362CVE	1/8"	2.0	2.2	0	10	10	7200	24/50 – 60
D362CVG	1/8"	2.5	3.4	0	7	7	7400	110/50 – 120/60
D363CVC	1/4"	1.5	1.3	0	15	15	7600	200/50 – 220/60
D363CVE	1/4"	2.0	2.2	0	10	10	7700	230/50 – 240/60
D363CVG	1/4"	2.5	3.4	0	7	7		
D363CVH	1/4"	3.0	4.5	0	5	5		
D363CVL	1/4"	4.0	6.0	0	3.5	3.5		
D363CVN	1/4"	5.0	7.5	0	2.5	2.5		
D363CVP	1/4"	6.0	8.5	0	1.5	1.5		



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	40	87	32	11	0.25
1/4"	40	87	32	11	0.25

3/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8"



normally closed

TYPE: B398

TECHNICAL SPECIFICATIONS

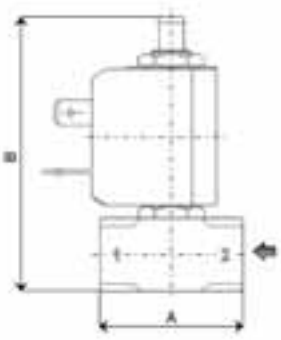
Media: water, oil, air, aggressive fluids	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: stainless steel (AISI 303 EN 10088-3)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: foodgrade FKM A80	
Coil power:	AC 10VA (holding)
	AC 16VA (inrush)
	DC 7W
Protection class: IP 65 (with connector)	

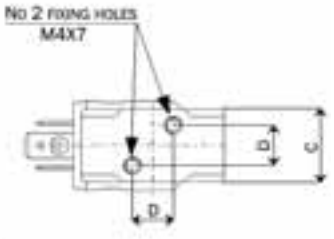
OPTIONS

1/8" NPT thread (Ex. Code B398EV3N)

SELECTION TABLE

VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
B398EV2	1/8"	1.2	0.7	0	15	15	2250	24/dc
B398EV3	1/8"	1.5	1.0	0	10	10	2200	24/50 – 60
B398EV5	1/8"	2.0	1.9	0	5	5	2400	110/50 – 120/60
B398EV7	1/8"	2.5	2.7	0	3	3	2600	200/50 – 220/60
							2700	230/50 – 240/60

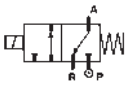




DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	35	68	18	10	0.1

3/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8" - G 1/4"



normally closed

TYPE: D398/399

TECHNICAL SPECIFICATIONS

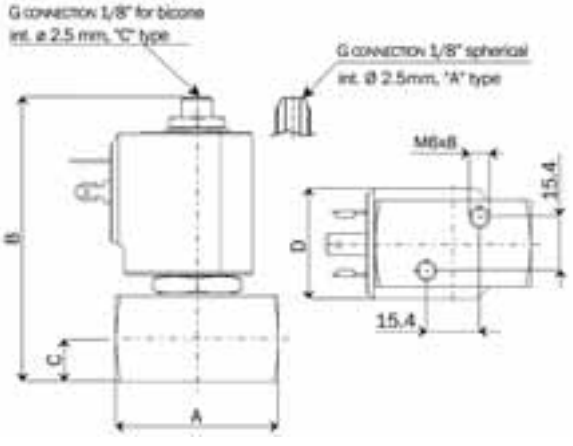
Media: aggressive fluids	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: stainless steel (AISI 303 EN 10088-3)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: FKM	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

OPTIONS

Normally open (Ex. code RD399CVH)
EPDM seal for air and hot water MAX 120°C (Ex. code D398CEG)
Armature tube with G connection 1/8" spherical (Ex. code D398AVC)

SELECTION TABLE

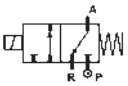
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D398CVC	1/8"	1.5	1.3	0	15	15	7250	24/dc
D398CVE	1/8"	2.0	2.2	0	10	10	7200	24/50 – 60
D398CVG	1/8"	2.5	3.4	0	7	7	7400	110/50 – 120/60
D399CVC	1/4"	1.5	1.3	0	15	15	7600	200/50 – 220/60
D399CVE	1/4"	2.0	2.2	0	10	10	7700	230/50 – 240/60
D399CVG	1/4"	2.5	3.4	0	7	7		
D399CVH	1/4"	3.0	4.5	0	5	5		



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	44	88	12.5	32	0.35
1/4"	44	88	12.5	32	0.35

3/2 WAY DIRECT ACTING SOLENOID VALVE, FOR MANIFOLDING G 1/8"



normally closed

TYPE: B919/920/921

TECHNICAL SPECIFICATIONS

Media: water, oil, air	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: FKM	
Coil power:	AC 10VA (holding)
	AC 16VA (inrush)
	DC 7W
Protection class: IP 65 (with connector)	
Standard manual override	

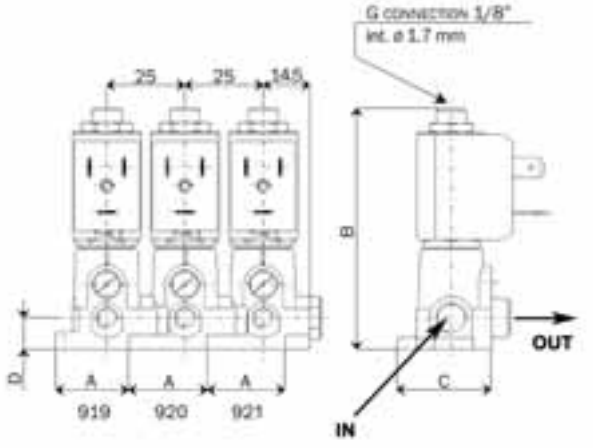
OPTIONS

Normally open (Ex. code RB919CVCM)

Assembly plug with silicon O-RING code 883 026 000

SELECTION TABLE

VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
B919CVCM	1/8"	1.5	1.0	0	10	10	2250	24/dc
B920CVCM	1/8"	1.5	1.0	0	10	10	2200	24/50 – 60
B921CVCM	1/8"	1.5	1.0	0	10	10	2400	110/50 – 120/60
							2600	200/50 – 220/60
							2700	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	26	76	34.5	9.5	0.18

MISCELLANEOUS

TYPE: MANYFOLD

EXAMPLE: No 3 X 2/2 WAY DIRECT ACTING NC

Customized solutions for various fluid control applications.

TECHNICAL SPECIFICATIONS: according to customer's request

TYPE: B296DVC

2/2 WAY DIRECT ACTING NC

Media: water, oil, air
Media temperature: -10°C … +130°C
Connection: male connection G 1/8" and hose tail ø 6 mm
Operating pressure: AC 0÷18 bar / DC 0÷15 bar
Body material: brass (CW617N EN 12165)
Seal material: FKM

TECHNICAL SPECIFICATIONS: see "B297" page 10

TYPE: B294DVC

2/2 WAY DIRECT ACTING NC

Media: water, oil, air
Media temperature: -10°C … +130°C
Square base connection: flange 25X25
Operating pressure: AC 0÷18 bar / DC 0÷15 bar
Body material: brass (CW617N EN 12165)
Seal material: FKM

TECHNICAL SPECIFICATIONS: see "B297" page 10

TYPE: B394CVC

3/2 WAY DIRECT ACTING NC

Media: water, oil, air
Media temperature: -10°C … +130°C
Square base connection: flange 25X25
Operating pressure: AC and DC 0÷10 bar
Body material: brass (CW617N EN 12165)
Seal material: FKM

TECHNICAL SPECIFICATIONS: see "B397" page 19

TYPE: RB216EVC

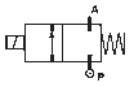
2/2 WAY DIRECT ACTING NO

Media: water, oil, air
Media temperature: -10°C … +130°C
Connection: IN➔ female G 1/8" - OUT➔ hose tail ø 6 mm
Operating pressure: AC and DC 0÷14 bar
Body material: naval brass (CW719R EN 12165)
Seal material: FKM

TECHNICAL SPECIFICATIONS: see "RB214" page 18

2/2 WAY DIRECT ACTING "DRY ARMATURE" SOLENOID VALVE

TOTAL SEPARATION BETWEEN INTERNAL PARTS AND MEDIUM



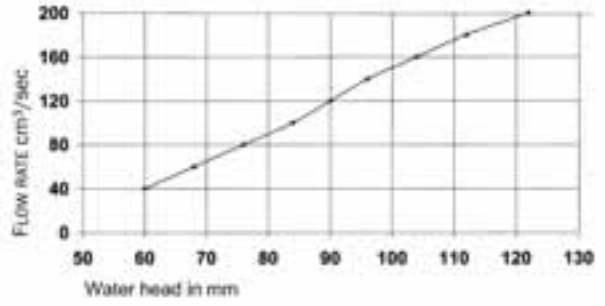
normally closed

TYPE: D208

TECHNICAL SPECIFICATIONS

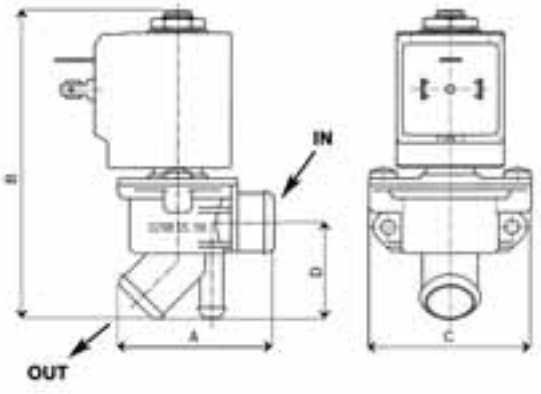
Media: water and beverages	
Media temperature: -10°C … +95°C	
Ambient temperature: -10°C … +50°C	
Body material: Natural Polysulphone UDEL P-1700 Natural 11	
Operator material: stainless steel	
Seal material: silicon	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

FLOW RATE CHART



SELECTION TABLE

VALVE	INLET fitting	OUTLET fitting	Nominal diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	(mm)	(mm)	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D208DSZ	Ø 17.5	Ø 16.5	13	(see chart)	0	0.1	-	7250	24/dc
C D208DSZ	Ø 17.5	Ø 16.5	13	(see chart)	0	-	0.1	7200	24/50 – 60
								7400	110/50 – 120/60
								7600	200/50 – 220/60
								7700	230/50 – 240/60

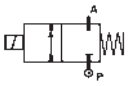


DIMENSIONS & WEIGHTS

VALVE TYPE	A	B	C	D	weight
Code	(mm)	(mm)	(mm)	(mm)	(Kg)
D208DSZ	47	112.5	48.5	28.8	0.125
C D208DSZ	47	112.5	48.5	28.8	0.125

2/2 WAY DIRECT ACTING "DRY ARMATURE" SOLENOID VALVE, G 3/8"

TOTAL SEPARATION BETWEEN INTERNAL PARTS AND MEDIUM



normally closed

TYPE: D211

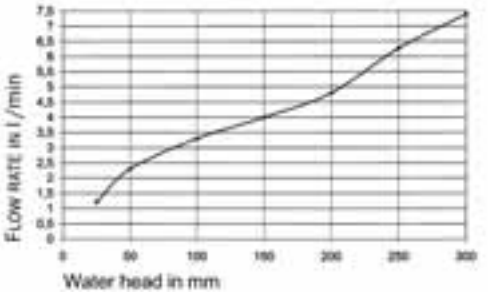
TECHNICAL SPECIFICATIONS

Media: water and beverages	
Media temperature: -10°C … +95°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Operator material: stainless steel	
Seal material: silicon	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

OPTIONS

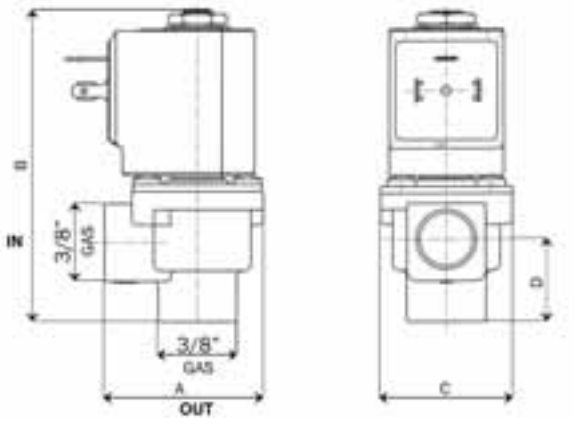
Electroless nickel plating treatment (Ex. code D211DSUK)

FLOW RATE CHART



SELECTION TABLE

VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D211DSU	3/8"	11	(see chart)	0	0.3	-	7250	24/dc
C D211DSU	3/8"	11	(see chart)	0	-	0.2	7200	24/50 – 60
							7400	110/50 – 120/60
							7600	200/50 – 220/60
							7700	230/50 – 240/60

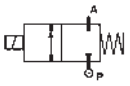


DIMENSIONS & WEIGHTS

VALVE TYPE	A	B	C	D	weight
Code	(mm)	(mm)	(mm)	(mm)	(Kg)
D211DSU	43.4	86	36	22	0.340
C D211DSU	43.4	86	36	22	0.340

2/2 WAY DIRECT ACTING "DRY ARMATURE" SOLENOID VALVE

TOTAL SEPARATION BETWEEN INTERNAL PARTS AND MEDIUM



normally closed

TYPE: 246

TECHNICAL SPECIFICATIONS

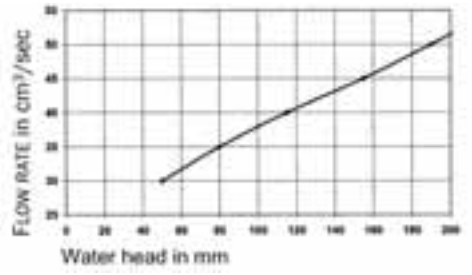
Media: water, food and beverages	
Media temperature: -10°C … +95°C	
Ambient temperature: -10°C … +50°C	
Body material:	246DSR brass (CW617N EN 12165)
	246DSQ natural hostaform (C13021)
Operator material: stainless steel	
Seal material: silicon	
Coil power:	AC 10VA (holding)
	AC 16VA (inrush)
	DC 10W
Protection class: IP 65 (with connector)	
Length of the vent pipe: 85 mm	
Standard flow regulation screw	

OPTIONS

Brass body with electroless nickel plating treatment
(Ex. code 246DSKOE)

Brass fittings available on request

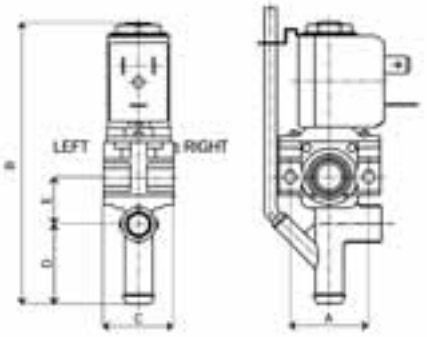
FLOW RATE CHART



SELECTION TABLE

VALVE	Left Hole	Right Hole	Nominal Diameter	OPD min	OPD max AC	OPD max DC
Code	-	-	(mm)	(bar)	AC	DC
246DSRDE	fast connection	cap	8.0	0	0.2	0.1
246DSRED	cap	fast connection				
246DSREP	cap	hose tail				
246DSRE0	cap	1/4" threaded				
246DSR0E	1/4" threaded	cap				
246DSR00	1/4" threaded	1/4" threaded				
246DSRPE	hose tail	cap				
246DSQAA	open without threads	open without threads	7.5			
246DSQDG	fast connection	closed				
246DSQGD	closed	fast connection				
246DSQG0	closed	1/4" threaded				
246DSQ0G	1/4" threaded	closed				
246DSQ00	1/4" threaded	1/4" threaded				

COILS	
Code	(Volts/Hz)
22V0	24/dc
2200	24/50 – 60
2400	110/50 – 120/60
2600	200/50 – 220/60
2700	230/50 – 240/60

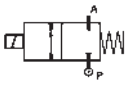


DIMENSIONS & WEIGHTS

VALVE TYPE	A	B	C	D	E	weight
Code	(mm)	(mm)	(mm)	(mm)	(mm)	(Kg)
246DSR..	28	101	25	29	17	0.2
246DSQ..	28	101	25	29	17	0.125

2/2 WAY DIRECT ACTING "DRY ARMATURE" SOLENOID VALVE

TOTAL SEPARATION BETWEEN INTERNAL PARTS AND MEDIUM



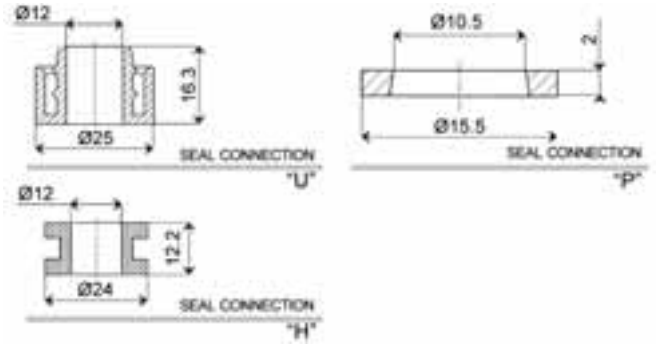
normally closed

TYPE: WB251

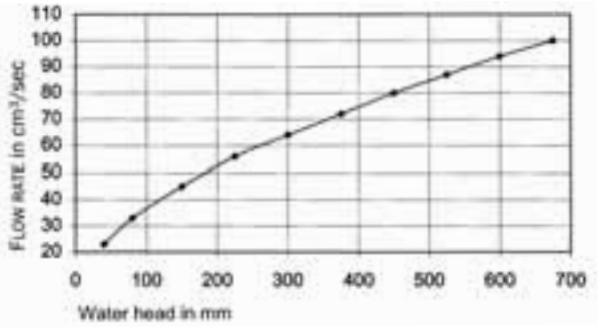
TECHNICAL SPECIFICATIONS

Media: water and beverages	
Media temperature: -10°C … +95°C	
Ambient temperature: -10°C … +50°C	
Body material: Natural Polysulphone UDEL P-1700 Natural 11	
Operator material: stainless steel	
Seal material: silicon	
Coil power:	AC 10VA (holding)
	AC 16VA (inrush)
	DC 10W
Protection class: IP 65 (with connector)	
Nominal diameter: 9.0 mm	
Standard flow regulation screw	

OPTIONS

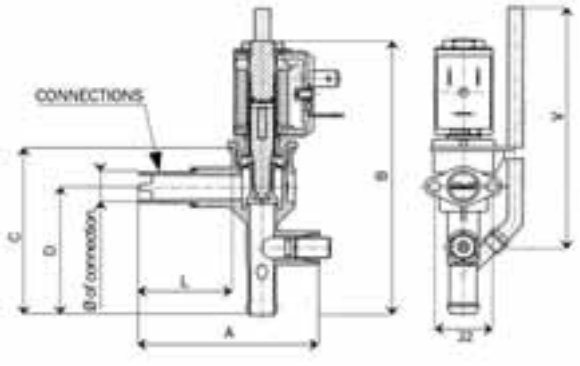


FLOW RATE CHART



SELECTION TABLE

VALVE	Type of connection	Seal type	Lenght of the vent pipe (V)	OPD min	OPD max		COILS	
Code	(mm)	-	(mm)	(bar)	AC	DC	Code	(Volts/Hz)
WB251DSS	Ø 12 x L=35	"P"	95				22V0	24/dc
WB251DSS1	Ø 12 x L=35	"P"	235				2200	24/50 – 60
WB251DSS01	Ø 11 x L=25	"P"	95				2400	110/50 – 120/60
WB251DSSA1	Ø 12 x L=35	"U"	95				2600	200/50 – 220/60
WB251DSSA2	Ø 12 x L=48	"U"	95				2700	230/50 – 240/60
WB251DSSB1	Ø 12 x L=35	"H"	95	0	0.07	0.05		
WB251DSSB2	Ø 12 x L=48	"H"	95					
WB251DSS11	Ø 11 x L=15.2	"P"	95					
WB251DSS12	Ø 11 x L=25	"P"	195					
WB251DSS13	Ø 12 x L=48	"H"	215					
WB251DSSVE	Ø 11 x L=10.5	"P"	95					

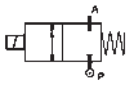


DIMENSIONS & WEIGHTS

VALVE TYPE	A	B	C	D	weight
Code	(mm)	(mm)	(mm)	(mm)	(Kg)
WB251DSS/1	70	108	65.5	50.2	0.175
WB251DSS11	49.7	108	65.5	50.2	0.175
WB251DSS01/12	59.5	108	65.5	50.2	0.175
WB251DSSA2/B2/13	82.5	108	65.5	50.2	0.175
WB251DSSA1/B1	70	108	65.5	50.2	0.175
WB251DSSVE	45	108	65.5	50.2	0.175

2/2 WAY DIRECT ACTING "DRY ARMATURE" SOLENOID VALVE

TOTAL SEPARATION BETWEEN INTERNAL PARTS AND MEDIUM



normally closed

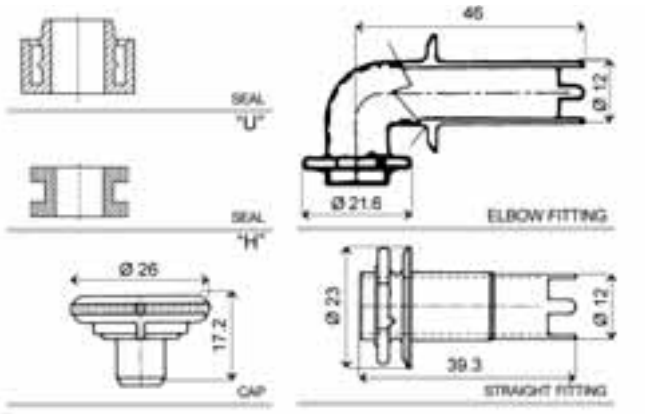
TYPE: WB253

TECHNICAL SPECIFICATIONS

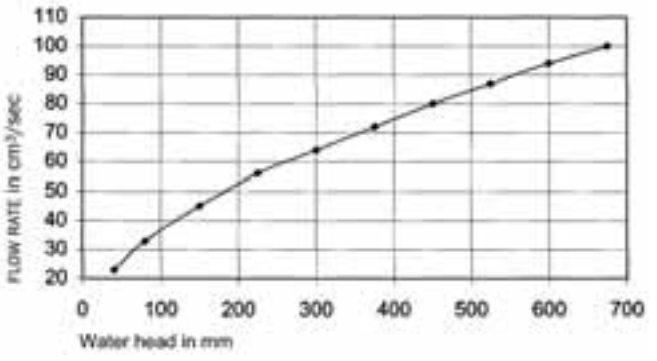
Media: water, food and beverages	
Media temperature: -10°C … +95°C	
Ambient temperature: -10°C … +50°C	
Body material: Natural Polysulphone UDEL P-1700 Natural 11	
Operator material: stainless steel	
Seal material: silicon	
Coil power:	AC 10VA (holding)
	AC 16VA (inrush)
	DC 10W
Protection class: IP 65 (with connector)	
Nominal diameter: 9.0 mm	
Standard flow regulation screw	

OPTIONS

Specify in the code the No. of valves requested (B=2; C=3; D=4; E=5; F=6)

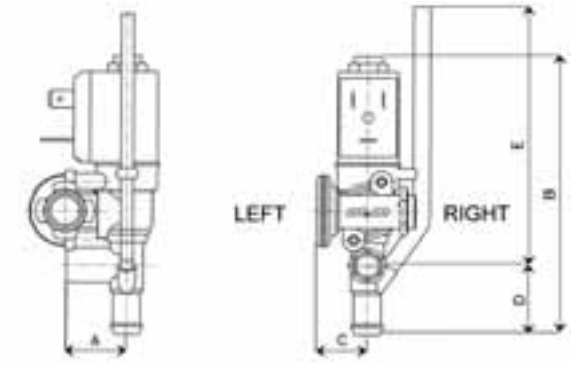


FLOW RATE CHART



SELECTION TABLE

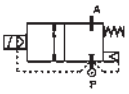
VALVE		Connection		Seal type	OPD min	OPD max		COILS	
	Code	(left)	(right)	-	(bar)	AC	DC	Code	(Volts/Hz)
WB25-DSRBD		CAP	STRAIGHT FITTING	"H"	0	0.07	0.05	22V0	24/dc
WB25-DSRBG		CAP	ELBOW FITTING	"H"				2200	24/50–60
WB25-DSRCD		CAP	STRAIGHT FITTING	"U"				2400	110/50–120/60
WB25-DSRCG		CAP	ELBOW FITTING	"U"				2600	200/50–220/60
WB25-DSRDB		STRAIGHT FITTING	CAP	"H"				2700	230/50–240/60
WB25-DSRDC		STRAIGHT FITTING	CAP	"U"					
WB25-DSRGC		ELBOW FITTING	CAP	"U"					
WB25-DSRGB		ELBOW FITTING	CAP	"H"					



DIMENSIONS & WEIGHTS

VALVE TYPE	A	B	C	D	E	weight
Code	(mm)	(mm)	(mm)	(mm)	(mm)	(Kg)
All type	22.5	104.5	18.5	25.6	130	0.125

2/2 WAY PILOT OPERATED SOLENOID VALVE, G 1/4" ÷ G 1"



normally closed

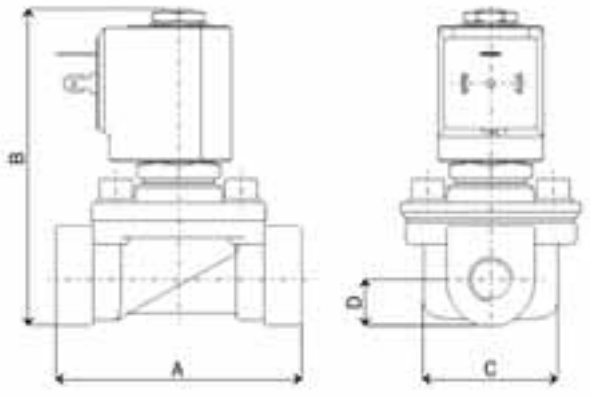
TYPE: D887/888/889/890/892

TECHNICAL SPECIFICATIONS

Media: hot water, steam	
Media temperature: -10°C … +150°C	
Ambient temperature: -10°C … +70°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Operator seal material: EPM PX 70/80	
Diaphragm material: PTFE	
Main seal material: EPM PX 70/80	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 22W
Protection class: IP 65 (with connector)	

SELECTION TABLE

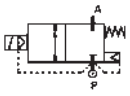
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS class "H" only	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D887DPV	1/4"	11.5	35	0.3	4.5	4.5	7278	24/dc
D888DPV	3/8"	11.5	50	0.3	4.5	4.5	7201	24/50 – 60
D889DPV	1/2"	11.5	55	0.3	4.5	4.5	7401	110/50 – 120/60
D890DPV	3/4"	11.5	70	0.3	4.5	4.5	7601	200/50 – 220/60
D892DPV	1"	11.5	75	0.3	4.5	4.5	7701	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4"	75	95	53	14	0.5
3/8"	75	95	53	14	0.5
1/2"	75	95	53	14	0.5
3/4"	85	105	53	22	0.8
1"	85	105	53	22	0.8

2/2 WAY PILOT OPERATED SOLENOID VALVE, G 3/4" - G 1"



normally closed

TYPE: D690/693

TECHNICAL SPECIFICATIONS

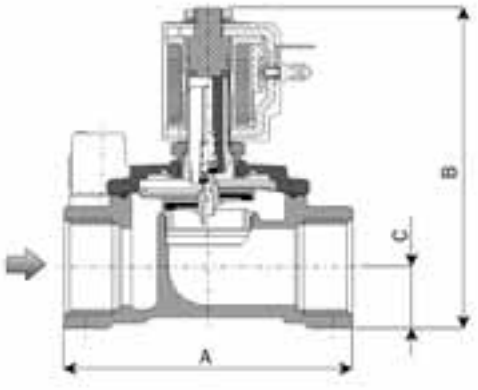
Media: hot water, steam	
Media temperature: -10°C … +180°C	
Ambient temperature: -10°C … +70°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Diaphragm material: PTFE	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
Protection class: IP 65 (with connector)	

OPTIONS

Speed control at closure (waterhammer free design) ex code D693DTYV

SELECTION TABLE

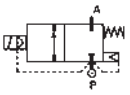
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS class "H" only	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D690DTY	3/4"	25	150	1	10	-	7201	24/50 – 60
D693DTY	1"	25	170	1	10	-	7401	110/50 – 120/60
							7601	200/50 – 220/60
							7701	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	weight
-	(mm)	(mm)	(mm)	(Kg)
3/4"	100	112	21.5	1.3
1"	100	112	21.5	1.3

2/2 WAY PILOT OPERATED PISTON VALVE, G 1/4” ÷ G 1/2”



normally closed

TYPE: D634/635/636

TECHNICAL SPECIFICATIONS

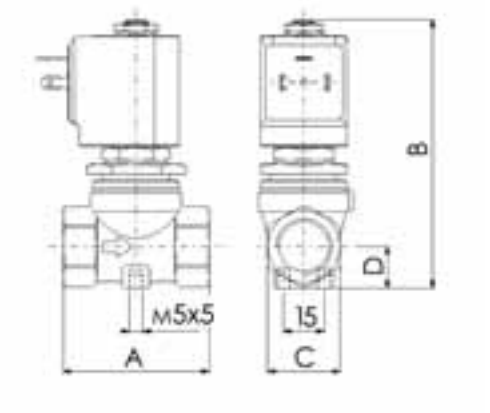
Media: water, steam	
Media temperature: +80°C … +180°C	
Ambient temperature: -10°C … +70°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: PTFE	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

OPTIONS

Electroless nickel plating tratment (Ex. code D636DTTK)

SELECTION TABLE

VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS class “H” only	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D634DTT	1/4”	10.0	21	0.3	10	10	7251	24/dc
D635DTT	3/8"	10.0	24	0.3	10	10	7201	24/50 – 60
D636DTT	1/2”	10.0	25	0.3	10	10	7401	110/50 – 120/60
							7601	200/50 – 220/60
							7701	230/50 – 240/60

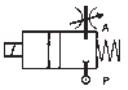


DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4”	54	100	Hex. 17	15.5	0,465
3/8"	54	100	Hex. 17	15.5	0,465
1/2"	54	100	Hex. 17	15.5	0,465

2/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/4"

WITH FLOW REGULATION



normally closed

TYPE: D267

TECHNICAL SPECIFICATIONS

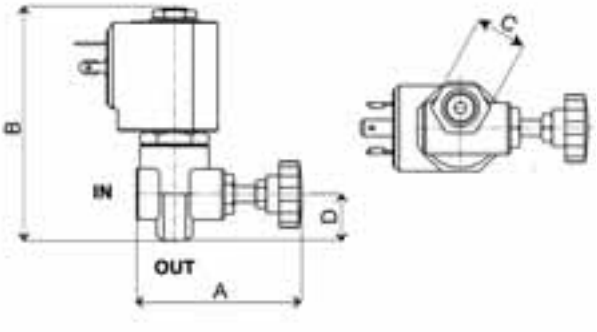
Media: water, steam	
Media temperature: -10°C … +180°C	
Ambient temperature: -10°C … +70°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: Rulon	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

OPTIONS

Normally open (Ex. code RD267DLH)

SELECTION TABLE

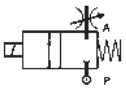
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS class "H" only	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D267DLE	1/4"	2.0	2.2	0	10	10	7251	24/dc
D267DLG	1/4"	2.5	3.4	0	10	10	7201	24/50 – 60
D267DLH	1/4"	3.0	4.5	0	10	8	7401	110/50 – 120/60
D267DLL	1/4"	4.0	6.0	0	8	5	7601	200/50 – 220/60
							7701	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4"	55 ÷ 60	88	Hex. 19	16.5	0.26

2/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/4" - G 3/8"



WITH FLOW REGULATION

normally closed

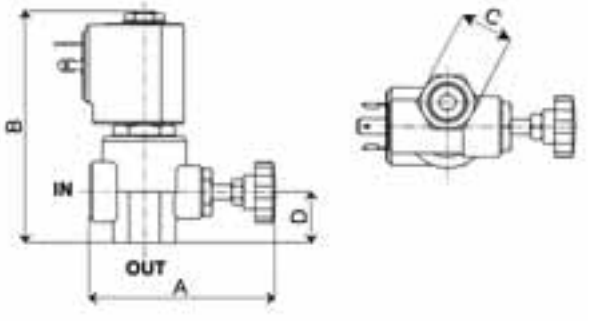
TYPE: D260/261

TECHNICAL SPECIFICATIONS

Media: water, steam	
Media temperature: -10°C … +150°C	
Ambient temperature: -10°C … +70°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: Rulon	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
Protection class: IP 65 (with connector)	

SELECTION TABLE

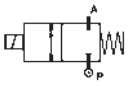
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS class "H" only	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D260DLP	1/4"	6.0	8.5	0	5.0	-	7201	24/50 – 60
D261DLP	3/8"	6.0	8.5	0	5.0	-	7401	110/50 – 120/60
							7601	200/50 – 220/60
							7701	230/50 – 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4"	72 ÷ 80	96	Hex. 22	20	0.395
3/8"	72 ÷ 80	96	Hex. 22	20	0.395

2/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8" - G 1/4"



normally closed

TYPE: D262/263

TECHNICAL SPECIFICATIONS

Media: water, steam	
Media temperature: -10°C … +180°C	
Ambient temperature: -10°C … +70°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: Rulon	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

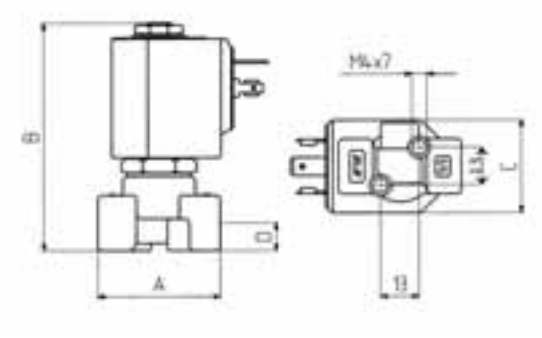
OPTIONS

Normally open (Ex. code RD262DLH)

Manual override (Ex. code D262DLAM)

SELECTION TABLE

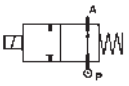
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS class "H" only	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D262DLA	1/8"	1.0	0.5	0	10	10	7251	24/dc
D262DLC	1/8"	1.5	1.3	0	10	10	7201	24/50 – 60
D262DLG	1/8"	2.5	3.4	0	10	10	7401	110/50 – 120/60
D262DLH	1/8"	3.0	4.5	0	10	8	7601	200/50 – 220/60
D263DLA	1/4"	1.0	0.5	0	10	10	7701	230/50 – 240/60
D263DLC	1/4"	1.5	1.3	0	10	10		
D263DLG	1/4"	2.5	3.4	0	10	10		
D263DLH	1/4"	3.0	4.5	0	10	8		



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	40	77.5	32	11	0.26
1/4"	40	77.5	32	11	0.26

2/2 WAY DIRECT ACTING SOLENOID VALVE, G1/4"



normally open

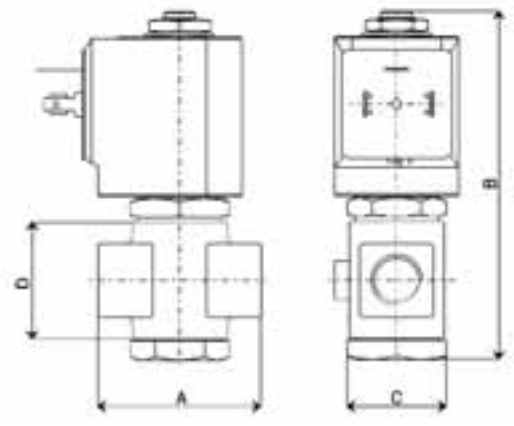
TYPE: RD236

TECHNICAL SPECIFICATIONS

Media: water, steam	
Media temperature: -10°C … +180°C	
Ambient temperature: -10°C … +70°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Main seal material: Rulon	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

SELECTION TABLE

VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS class "H" only	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
RD236DLA	1/4"	1.0	0.5	0	10	10	7251	24/dc
RD236DLC	1/4"	1.5	1.3	0	10	10	7201	24/50 – 60
RD236DLE	1/4"	2.0	2.0	0	10	10	7401	110/50 – 120/60
RD236DLH	1/4"	3.0	3.5	0	10	10	7601	200/50 – 220/60
							7701	230/50 – 240/60

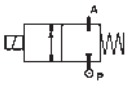


DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4"	42	89	24.5	30.3	0.25

2/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/8" - G 1/4"

HIGH PRESSURE



normally closed

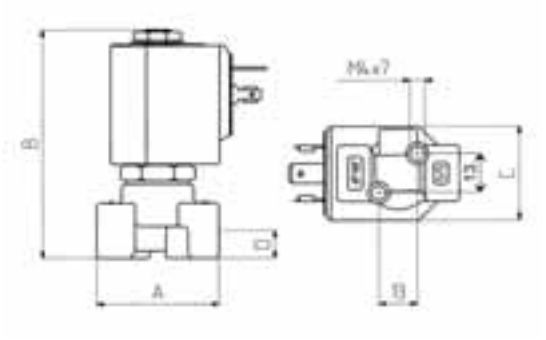
TYPE: D262/263

TECHNICAL SPECIFICATIONS

Media: water, steam	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 UNIEN 10088-3)	
Operator material: stainless steel	
Seal material: Ruby	
Coil power:	AC 18VA (holding)
	AC 36VA (inrush)
	DC 14W
Protection class: IP 65 (with connector)	

SELECTION TABLE

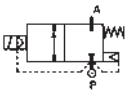
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D262DRA1	1/8"	1.0	0.5	0	150	70	7250	24/dc
D262DRB1	1/8"	1.2	0.7	0	150	70	7200	24/50 - 60
D262DRC1	1/8"	1.5	1.3	0	150	70	7400	110/50 - 120/60
D263DRA1	1/4"	1.0	0.5	0	150	70	7600	200/50 - 220/60
D263DRB1	1/4"	1.2	0.7	0	150	70	7700	230/50 - 240/60
D263DRC1	1/4"	1.5	1.3	0	150	70		



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/8"	40	77.5	32	11	0.26
1/4"	40	77.5	32	11	0.26

2/2 WAY PILOT OPERATED PISTON VALVE, G 1/4” ÷ G 1/2”



normally closed

TYPE: D634/635/636DTT1

TECHNICAL SPECIFICATIONS

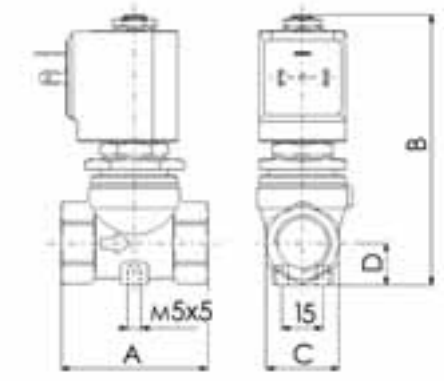
Media: water, air, oil	
Media temperature: -10°C … +130°C	
Ambient temperature: -10°C … +70°C	
Body material: brass (CW617N EN 12165)	
Orifice material: stainless steel (AISI 303 EN 10088-3)	
Operator material: stainless steel	
Seal material: PTFE	
Coil consumption:	AC 25VA (holding)
	AC 50VA (inrush)
	DC 22W
Protection class: IP 65 (with connector)	

OPTIONS

Electroless nickel plating treatment (Ex. code D636DTTK1)

SELECTION TABLE

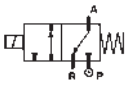
VALVE	G connection	Nominal Diameter	Flow rate kv	OPD min	OPD max		COILS	
Code	-	(mm)	(l/min)	(bar)	AC	DC	Code	(Volts/Hz)
D634DTT1	1/4”	10	21	0.3	100	60	7278	24/dc
D635DTT1	3/8”	10	24	0.3	100	60	72K1	24 - 50/60
D636DTT1	1/2”	10	25	0.3	100	60	74K1	110/50 - 120/60
							77K1	230/50 - 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4”	54	100	Hex. 17	15.5	0.465
3/8”	54	100	Hex. 17	15.5	0.465
1/2”	54	100	Hex. 17	15.5	0.465

3/2 WAY DIRECT ACTING SOLENOID VALVE, G 1/4" ÷ G 1/2"



FOR VACUUM

normally closed

TYPE: D337/338/339CVU1

TECHNICAL SPECIFICATIONS

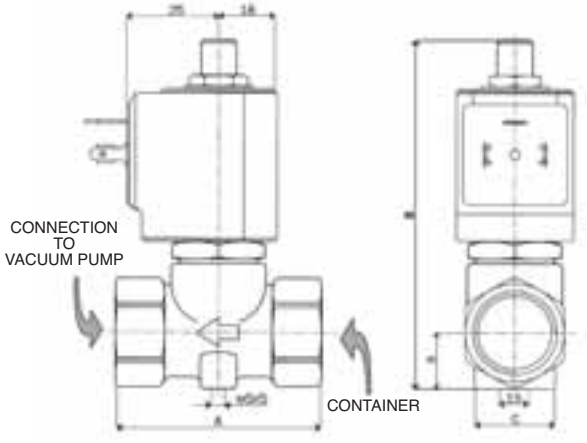
Media: vacuum	
Ambient temperatur : -10°C … +50°C	
Body material: brass (CW617N EN 12165)	
Operator material: stainless steel	
Seal material: FKM	
Coil power:	AC 25VA (holding)
	AC 50VA (inrush)
	DC 22W
Protection class: IP 65 (with connector)	

OPTIONS

2 way version (Ex.code D239DVU1)

SELECTION TABLE

VALVE	G connection	Nominal Diameter	Flow rate kv	OPD max	COILS class "H" only	
Code	-	(mm)	(l/min)	(bar)	Code	(Volts/Hz)
D337CVU1	1/4"	10.5	21	- 0,95 bar (vacuum 50 mbar a)	7278	24/dc
D338CVU1	3/8"	10.5	24		72K1	24 - 50/60
D339CVU1	1/2"	10.5	25		74K1	110/50 - 120/60
					77K1	230/50 - 240/60



DIMENSIONS & WEIGHTS

G connection	A	B	C	D	weight
-	(mm)	(mm)	(mm)	(mm)	(Kg)
1/4"	54	96.7	39	15.5	0.4
3/8"	54	96.7	39	15.5	0.4
1/2"	54	96.7	39	15.5	0.4

PILOT OPERATOR FOR USE IN DANGEROUS ATMOSPHERES (ATEX)

SERIES: N

THE FOLLOWING M&M VALVES CAN BE FITTED WITH EXPLOSION-PROOF OPERATOR, CLASS EEx M II T4, THE OPERATING PRESSURE REMAINING THE SAME THAN THE STANDARD VALVE(1):

- D262 - D263
- D204 - D205 - D222
- D206DVY
- D223 - D224 - D225
- D326
- D362 - D363 (w/o manual override)

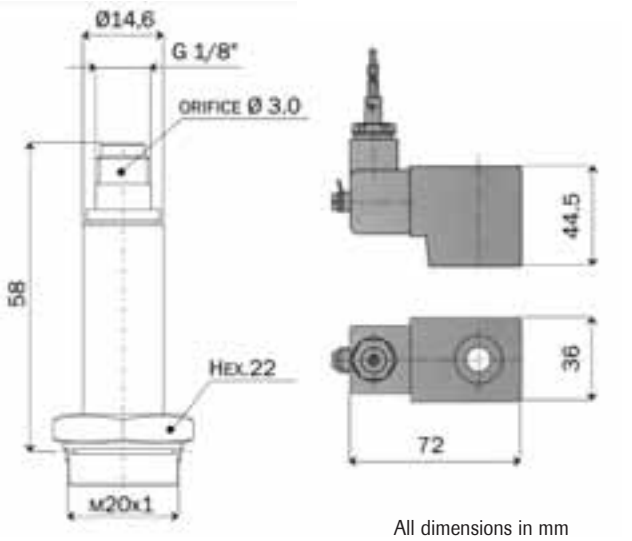
COILS TECHNICAL SPECIFICATIONS

Coils are supplied with 3 mt power cable, wired on a non-removable plug
Cable type : H05V2V2-F 3G1
Degree of protection: IP 65
Insulation class: “F” EN 60730
Voltage tolerance: -10% … +10%
Operation: continuos
Protection class: EEx m II T4

OPERATOR TECHNICAL SPECIFICATIONS

Operator material: stainless steel
Seal material: FKM
2/2 way NC operator (code N014DVH)
3/2 way NC operator (code N014CVH)

DIMENSIONS



All dimensions in mm

SELECTION TABLE

CODE	Tension	Power holding	insulation class	room temperature min	room temperature max	media temperature min	media temperature max	ED	fuse (2)
N253	24V dc	10,1 W							800
N203	24V 50 / 60 HZ	7,2 VA							800
N403	110V - 50 HZ	9,1 VA	F	-20°C	+50°C	-20°C	+80°C	100%	200
NK03	120V - 60 HZ	8,6 VA							200
N703	230V - 50 HZ	8,5 VA							100

NOTES

(1) Manual override not available for Eex solenoid valves.

SAFETY WARNINGS

(1) A mains fuse or an equivalent means of protection (breaking value shown on table for each coil) shall be installed on the mains supply line. Absence of mains protection is a non conformity to safety standards (EC Directives 94/9/CE and 1999/92/CE) and is a possible cause of explosion.

(2) Valves for potentially explosive atmospheres are available from factory only. USE OF COIL OR OPERATOR ONLY DOESN'T MAKE THE VALVE EXPLOSION-PROOF.

SPECIAL VERSIONS AVAILABLE UPON REQUEST. PLEASE CONTACT M&M FOR DETAILS

COILS FOR M&M INTERNATIONAL SOLENOID VALVES

The coils that M&M International produces are designed for continuos duty in conformity to the EN60730 safety standards. They are encapsulated in a self-extinguishing synthetic material and offer high mechanical protection and excellent thermal dissipation. They are fully interchangeable on all M&M International solenoid valves, thereby reducing warehouse inventories.

TECHNICAL DATA

Electrical connection : faston connection 6.3x0.8 (DIN 46340)			
series 2000: connection to DIN 46244			
series 7000: connection to DIN 43650A			
Protection class: IP65 (with connector) - EN 60529			
Insulation class: “F” and “H” EN60730			
Voltage tolerance: +10% ÷ -15% AC / ± 5% DC			
Operation: continuous			
Coil power:		SERIES 2000	SERIES 7000
	AC	10VA	18VA (holding)
	AC	16VA	36VA (inrush)
	DC	7W	14W

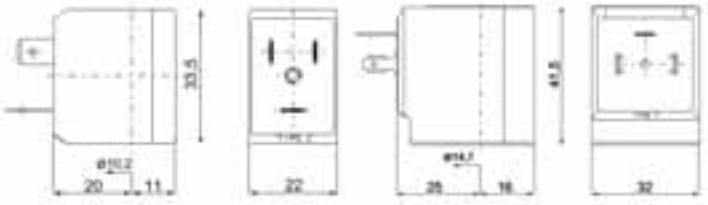
SERIES: 2000/7000

OPTIONS

Series 7000 coils with insulation class “H” (e. g. coil 7251)

UL Approved coils (series 2000 and 7000) (e. g. coil 240R)

DIMENSIONS & WEIGHTS



Series 2000: Kg 0.060

Series 7000: Kg 0.146

VOLTAGE & FREQUENCY	Code Series 2000	Code Series 7000	(volts/Hz)
	2150	7150	12/dc
	2250	7250	24/dc
	2200	7200	24/50-60
	2400	7400	110/50 - 120/60
	2600	7600	200/50 - 220/60
	2700	7700	230/50 - 240/60

DIN CONNECTORS FOR SOLENOID VALVES

The coils connectors provide the safest flexible system for connecting M&M international solenoid valves and give a protection class of IP65. They are designed and made of synthetic material offering a high level of electrical insulation.

TECHNICAL DATA

Rated voltage (Max.): 250V AC-300V DC
Nominal current: 10 A (Rated)/16A (Max.)
Wire cross-section: 1.5 mm² (Max.)
Cable diameter: 6-8 mm (PG9)
Protection class: IP65 - EN 60529
Insulation class: group C - VDE 0110
Colour: black
Supplied with screw and gasket in NBR

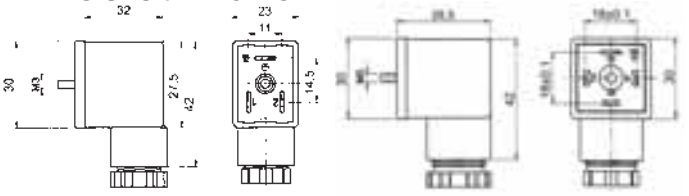
OPTIONS

Connectors with protection circuits

Connectors with LED

SERIES: 600 001 000/011 000

DIMENSIONS & WEIGHTS



For coil series 2000 - Series 600 001 000: 0.019 kg

For coil series 7000 - Series 600 011 000: 0.020 kg

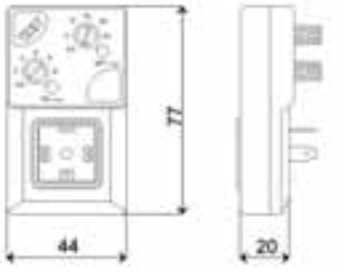
ANALOG AND DIGITAL ELECTRONIC TIMERS

Ideal for: Automatic Drain Valves - Sampling Valves - Lubrication Systems - Air Dryers

ANALOG TIMER TECHNICAL SPECIFICATIONS

SERIES: AT2000

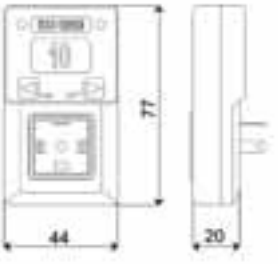
Supply voltage:	24..240V AC/CC - 50Hz/60Hz
	for "CE" marked Timer
	120..240V AC/DC - 50Hz/60Hz
	for cULus approved Timer (Code AT2000C02*)
Absorption:	4 mA Max
Operating temperature:	- 10° C + 50° C
Class protection:	IP65 - EN 60529
Switch holding voltage:	400V Max
Switch capacity:	1A
Inrush current:	10A for 10 ms
Duty cycle:	100% ED
Switch life:	$3 \cdot 10^{8}$
Repeat accuracy:	± 1%
Timing temperature coefficient:	± 0.005% - C°
Time ON:	▪ from 0.5 to 10 s.
Time OFF:	▪ from 30 s. to 45 min.
Set/Reset/Test:	Membrane key
Circuit:	UL 94 V0
Indicators:	GREEN LED for “power ON”
	RED LED for “valve open”
Manual override:	Test
Colour:	Black
*cULus approval number:	E200580

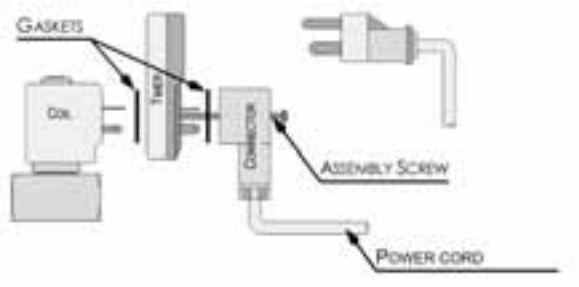


DIGITAL TIMER TECHNICAL SPECIFICATIONS

SERIES: DT3000

Supply voltage:	24..240V AC/DC - 50Hz/60Hz
	for "CE" marked Timer
	120..240V AC/DC - 50Hz/60Hz
	for cULus approved Timer
Absorption:	4 mA Max
Operating temperature:	- 10° C + 50° C
Class protection:	IP65 - EN 60529
Switch holding voltage:	400V Max
Switch capacity:	1A
Inrush current:	10A for 10 ms
Duty cycle:	100% ED
Switch life:	$3 \cdot 10^{8}$
Repeat accuracy:	± 0.01%
Timing temperature coefficient:	± 0.0001% - C°
Time ON:	▪ from 0 to 9.5 s., step 0.5 s.
	from 10 to 99 s., step 1.0 s.
Time OFF:	▪ from 0 to 9.5 min., step 0.5 min.
	from 10 to 99 min., step 1 min.
Indicators:	GREEN LED for “power ON”
	RED LED for “valve open”
Manual override:	Test
Colour:	Black





Note: Timers supplied in single box with two squared gaskets and M3X50 fixing screw (see assembling scheme)

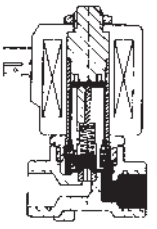
VALVE SELECTION

The choice of a solenoid valve shall be made when following conditions are respected:

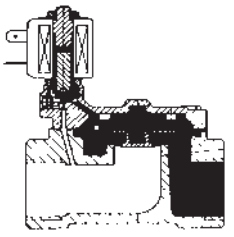
- ✔ Media with few dirt particles
- ✔ Moderate flow volumes
- ✔ Average differential pressures
- ✔ High speed in operation

VALVE TYPES

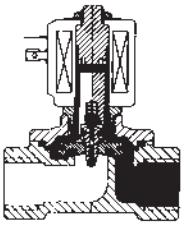
✔ **Direct acting solenoid valves 2/2 and 3/2 way NC or NO**
The supply coil electrically generates a magnetic force that attracts the armature, which contains the seat that acts upon a passage orifice. The armature, rising, lets the fluid pass. The range of operating pressures depends directly on the attraction force of the coil. Average response time 5÷25 ms.



✔ **Pilot operated solenoid valves 2/2 way NC or NO**
This solenoid valve uses the force of the fluid to operate the valve via a suitable integral pilot valve. The inlet pressure must always be at least the same as the minimum ΔP figure shown on the data sheets. Using the same coils as direct acting valves much higher fluid volumes and pressures can be controlled with this solenoid valve. Average response time 15÷120 ms.



✔ **Pilot operated solenoid valves with assisted lift 2/2 way NC**
These solenoid valves are a combination of the pilot operated valves and the direct acting valves. The armature is mechanically connected to the diaphragm on which there is a pilot office. With minimal pressures the solenoid valve acts like a direct acting valve. With higher pressures it works as a pilot operated valve.
Average response time 200÷500 ms.



FUNCTION TYPES

2/2 way function indicates valves with inlet and outlet connections, whilst valves with 3/2 way functions have 3 connections and 2 flow passages. One orifice always remains open and one closed. Connections and flow direction are shown in the symbols on each technical data sheet (DIN-ISO 1219).

At rest valves can be either normally closed (NC) or normally open (NO):

- Normally closed (NC): the valve opens when the coil is energised.
- Normally open (NO): the valve closes when the coil is energised.

OPTIONAL FEATURES

✔ **Manual Override (M)**
Normally closed direct acting and pilot operated solenoid valves can be supplied with a manual override which allows the valve to be opened independently of electrical current.

✔ **Waterhammer Control (V)**
Pilot operated solenoid valves can be supplied with a system that regulates the closing speed of the diaphragm in order to control waterhammer.

TECHNICAL INFORMATION

The following points should be considered to ensure correct choice of valve:

✔ **Connections and Nominal Diameters**
Threaded connections are either "G"- inches (ISO 228) or metric. Nominal diameters (DN) are expressed in millimetres and correspond to the diameter of the valve's main orifice.

✔ **Operating Pressure Differential (OPD)**
Pressure values shown in this catalogue are maximum pressures expressed in bar with zero pressure at outlet. For 3/2 way solenoid valves the pressure range can vary when used in other functions or systems. The maximum working pressure (PN) that the valve can be subjected to is, in general, equal to 1.5 times the maximum value of the operating pressure differential (OPD).

✔ **Flow**
The flow is the quantity of fluid that passes through the valve's main orifice which has the nominal diameter (DN) shown in the tables. The flow is given with a constant value kv (according to VDI/VDE 2173) that shows how many litres of water, at a temperature of 20°C, flow through the valve in one minute with a pressure difference of one bar across the valve. To determine the flow at higher pressures, multiply the value kv by the square root of the differential pressure. Flow values shown in the selection tables are subject to a tolerance of ± 15%.

✔ **Seal materials**
Consideration of the media should be made when selecting seal and body types.
NBR should be used for air, water, neutral gases, diesel and in general it is resistant to oils and grease from –10°C to +90°C.
EPDM for hot water and steam. It is resistant to bases and acids in weak concentrations from –40°C to +140°C. EPDM seals should not be used for media containing oil.
FKM combines most of the characteristics of NBR and EPDM and is particularly suitable for hot water and hydrocarbons from –10°C to +140°C.
PTFE is practically resistant to all media. It is rigid and is used from –20°C to +180°C.
RULON and RUBY are stiff materials particularly suitable for heavy duty applications.
All the data shown in the selection tables refer to media with a viscosity not higher than 21 cST (3°E) (1 centistoke=1 mm^2/s).

✔ **Coil power supply**
It is important that the exact voltage and frequency of the coil is used for the valve to operate correctly. Provided the coil is fitted correctly on the operator and that the armature is not obstructed, the valve can be operated for an indefinite time within the temperature limitations indicated. All solenoid valves have copper shading ring to reduce vibrations caused by alternating currents.

✔ **Media and Ambient Temperatures**
Temperature limits for the media are shown and should be used as a guide to valve selection. Normally the maximum ambient temperature can reach +50°C for solenoid valves with coils in class "F", +70°C for class "H". For applications outside these limits please contact our technical office.

✔ **General purpose solenoid valves**
Solenoid valves shown in this catalogue, either normally open or normally closed, are intended to control the flow of fluids and cannot be used as safety valves.

VALVE INSTALLATION

To ensure trouble-free operation please observe the following:

✔ **Safety**

Always connect the coil's earth terminal to ground to ensure the safety of the user and installation.

✔ **Installation**

Keep the valve operator in a vertical position, facing upwards. This prevents limescale or dirt particles in the operator tube which could restrict the armature or create excessive noise whilst operating.

✔ **Connections**

To ensure that the solenoid valve works properly, do not connect to pipework with an internal diameter less than the nominal diameter (DN) of the valve. Clean all pipework before connection to the solenoid valve. The recommended tightening torque of the coil nut to avoid damage of the valve components is 0,5 Nm.

✔ **Flow Direction**

Respect the direction of flow across the valve, shown with an arrow or by numbers on the valve body, depending on the model type.

✔ **Filtration**

If the fluid contains dirt particles it is necessary to install a filter upstream of the solenoid valve. Dirt is the most frequent cause of malfunction.

✔ **Environment**

Coils fitted with suitable connectors have a protection class of IP65. However, it is advisable not to use the solenoid valve outside or in very damp conditions without adequate protection. Provide sufficient ventilation for the solenoid valve. **During continuous service the coil of the solenoid valve becomes hot and should not be touched.**

TECHNICAL INFORMATION PAGE

For additional technical information please copy this page and fax it to us duly completed at no. +39 035 531763
We will be pleased to answer all of your queries.

✔ **Company** ----------

✔ **Address** ----------

✔ **Name and position** ----------

✔ **Telephone number** ----------

✔ **Fax number** ----------

✔ **E-mail address** ----------

✔ **Actuator** ☐ solenoid ☐ pneumatic

✔ **Operation** ☐ direct act. ☐ Pilot operated ☐ assisted lift

✔ **Type** ☐ 2/2 ☐ 3/2

✔ **Function** ☐ NO ☐ NC

✔ **Connections** ----------

✔ **Controlled media** ----------

✔ **Media temperature** ----------

✔ **Pilot media** (only for pneumatic valves) **/ Pilot media pressure** ----------

✔ **Media pressure**

nominal ---------- min. ---------- max. ----------

✔ **Flow** ----------

✔ **Ambient temperature** ----------

✔ **Electrical supply** ☐ AC ☐ DC

Volts ---------- Frequency ----------

✔ **Application** ----------

Max. Power Consumption ----------

✔ **Sketches or Drawings**

✔ **Notes** ----------

✔ **Valve presently in use** (brand / type) ----------

✔ **Annual quantity** ----------

✔ **Date** ----------

✔ **Signature** ----------

Mod. 03.05 Rev. 1

CE

CE MARKING

The CE mark indicates that the product satisfies all the regulations governing safety laid down by the European Community. Products displaying this mark can be freely distributed within the markets of the European Community.

✔ **EC Directives**

EC directives for product safety were issued to unify regulations and working practices in force in the countries of the community prior to the constitution of the European Union.
The following three directives concern electrical appliances and machines in general:

Machinery Directive
EMC Directive
Low Voltage Directive

The directive EC 97/23 concerns safety of pressure bearing equipment

✔ **M&M International products conforming to the EC directives**

Products subject to the Low Voltage Directive are given a certification by the European Community.
M&M International issues declarations of conformity such as in the attached form "Declaration of conformity to EC" (see the example below).

We believe that our products are components and as such do not form a part of the range of products subject to the EMC directive. However, conformity of M&M International products to the EMC directive could change depending on the function of the product's use, of the configuration (for example the use of connectors with passive electronic components, LED etc.), or the conditions of the electrical connection. For this reason it is recommended that you check that your final product conforms to the EMC directive.

EXAMPLE OF DECLARATION OF CONFORMITY TO CE

The company M&M International S.r.L. – Via Portico, 17 – 24050 Orio al Serio (BG) - Italy

Declares that the products:

SOLENOID VALVES FOR GENERAL PURPOSES

Are fitted by coils complying with the technical manual issued by M&M, referring to the following Harmonized Standards:

EN 60730-1
EN 60529

Therefore the products, when used in compliance with the directions quoted in the data sheets and following the instruction of installation and use, comply with the essential requirements of the directives:

73/23/EC and amendment 93/68/EC

CE mark on products since 1997

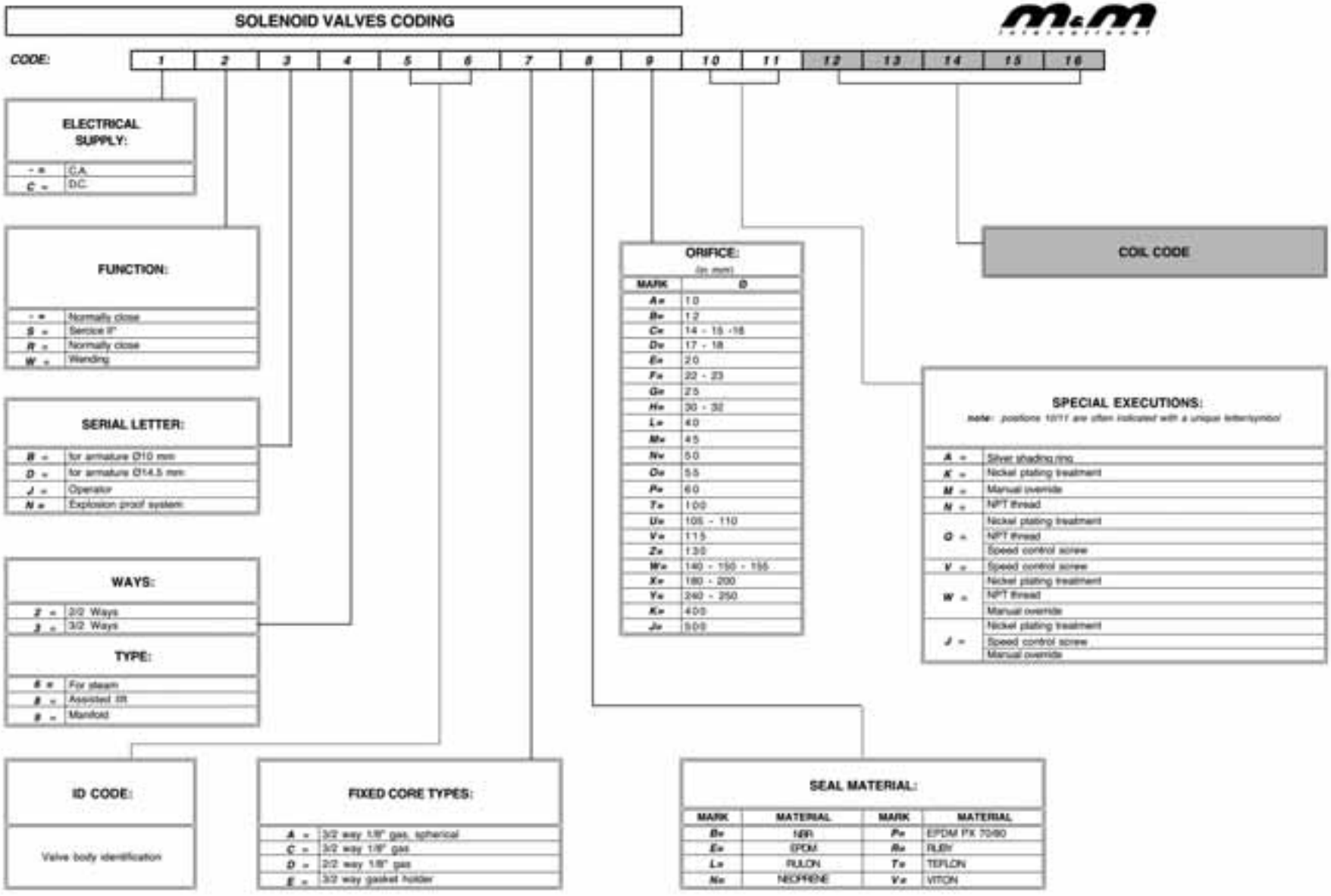
M&M valves are also developped and constructed in compliance to the requirements of the directive concerning pressure bearing equipment

97/23/EC, art. 3.3

Orio al Serio, January 2, 2002

M&M international S.r.l.
Managing Director

SOLENOID VALVES CODING



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