BACCARA®
AUTOMATION & CONTROL

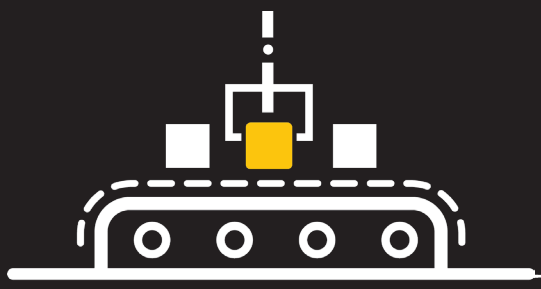
Industry Catalog

INDUSTRY

Tackling climate
change together

BACCARA®

AUTOMATION & CONTROL



INDUSTRY

INDEX

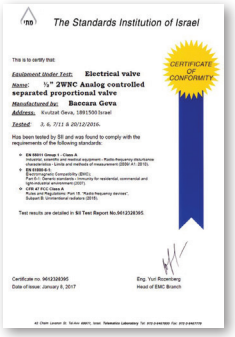
CERTIFICATION

ISO 9001:2015
Quality Management System : Design, production, testing and marketing of solenoid valves and automation control equipment

ISO 14001:2015
Environmental Management System : Design, production, testing and marketing of solenoid valves and automation control equipment

ISO 45001:2018
Occupational Health & Safety Management System : Design, production, testing and marketing of solenoid valves and automation control equipment

CE
EC Declaration of Conformity
Complies with the requirements and provisions of the Council Directive 2014/35/EU
Available on selected models only



EN55011 Group1 –
Class A / EN61000-6-1 / CFR 47 FCC Class A
EMC - SII Certificate of Conformity

UL 429
Standard for electrically operated valves
Available on selected models only

FCC
Product certification from The Federal Communications Commission
Available on selected models only

RU (UR)
"Recognized Component Mark" : a quality mark issued by UL and placed on components which are intended to be part of a UL listed product
Available on selected models only

BACCARA®
AUTOMATION & CONTROL

SOLENOID VALVES

GEM-SOL® | GENERAL PURPOSE

Tackling climate
change together

GEM-SOL® | A16 (G65-A) Special
2 Way NC

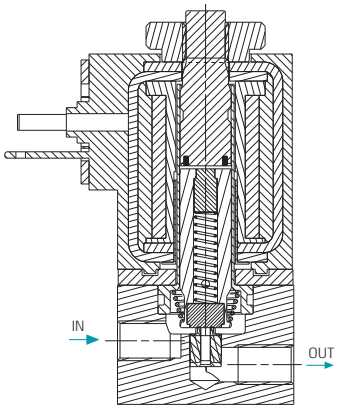
Technical Data

Function	2 Way NC
Ports size	M5, #10UNF
Orifice size	See table
Pressure range	See table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Aluminium, Stainless Steel AISI 316, Brass **Solenoid Operator** Stainless Steel AISI 300 & 400 series, Brass **Seals:** NBR, FKM, EPDM
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector

Brass | 2 Way NC

Max. Pressure (bar) 2 Way NC

Coil Current/Power	Orifice (mm)				
	0.8	1.0	1.2	1.6	2.0
AC - 3.6VA	30	25	20	12	8
DC - 3W	30	25	20	9	5
Flow factor Kv(l/min)	0.4	0.5	0.65	1.2	1.6

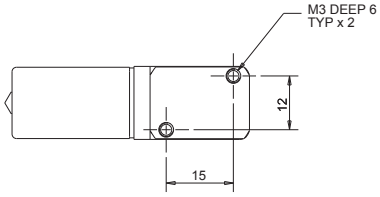


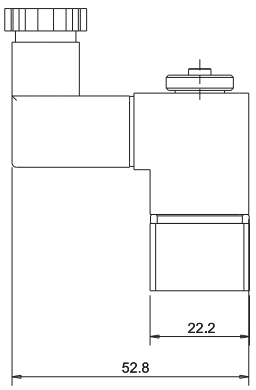
Voltage & Power Consumption

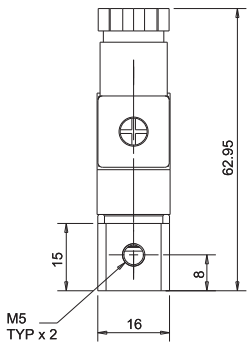
	AC 50Hz		DC (W)
V	3.2VA	3.6VA	3
12			•
24		•	•
110		•	
230	•		

• Available options

Dimensions







* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | A16 (G65-A) Special

3 Way NC

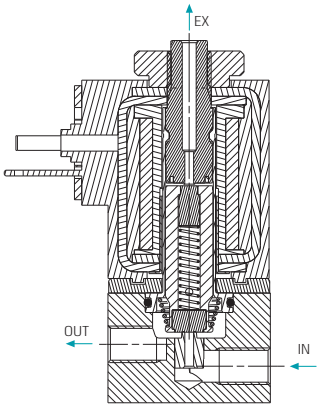
Technical Data

Function	3 Way NC
Ports size	M5, #10UNF
Orifice size	See table
Pressure range	See table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Aluminium, Stainless Steel AISI 316, Brass **Solenoid Operator** Stainless Steel AISI 300 & 400 series, Brass **Seals:** NBR, FKM, EPDM
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector

Aluminium | 1.2 orifice

Max. Pressure (bar) 3 Way NC

Coil Current/Power	Orifice (mm)		
	0.8	1.0	1.2
AC - 3.6VA	10	8.5	5.5
DC - 3W	10	8.5	5.5
Flow factor Kv(l/min)	0.4	0.5	0.65

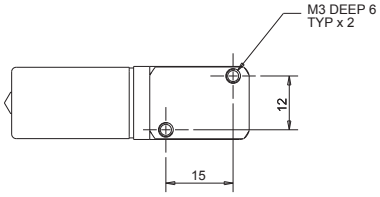


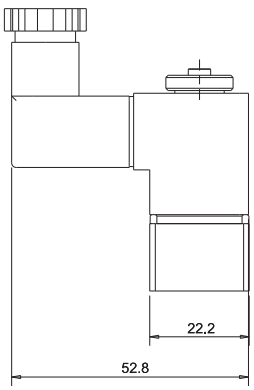
Voltage & Power Consumption

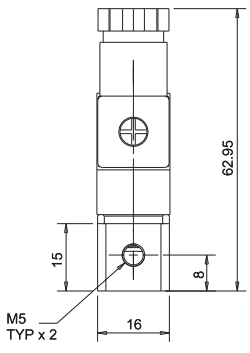
	AC 50Hz		DC (W)
V	3.2VA	3.6VA	3
12			•
24		•	•
110		•	
230	•		

• Available options

Dimensions







* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | A22 (G80-A)

2 Way NC, NO

Technical Data

Function	2 Way NC, NO
Ports size	1/8" BSP, NPT, M5
Orifice size	See table
Pressure range	• See table • Valves for pressure higher than 12 bar cannot be supplied with manual override
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Aluminium, Stainless Steel AISI 316, Brass **Solenoid Operator *** Stainless Steel AISI 300 & 400 series, Brass *** Standard operators are Stainless Steel** **Seals:** NBR, FKM, EPDM, FFKM
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector

Brass

Stainless Steel

Aluminium

Max. Pressure (bar) 2 Way NC

Coil Current/Power	Orifice (mm)				
	1.0	1.2	1.6	2.0	2.4
AC - 8.5W	40	35	35	12	10
AC - 5W	40	30	15	8	6
DC - 6W	40	35	20	12	10
DC - 3W	40	30	15	5	4
Flow factor Kv(l/min)	0.5	0.65	1.2	1.6	2

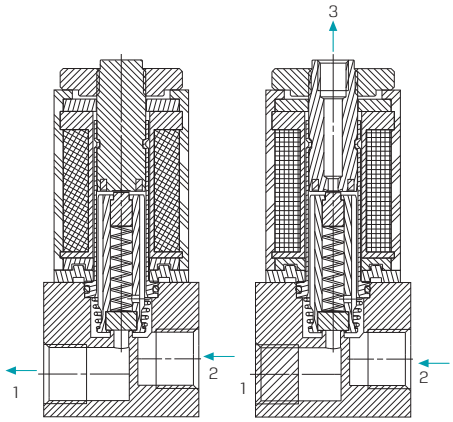
Max. Pressure (bar) 2 Way NO

Coil Current/Power	Orifice (mm)	
	1.2	1.6
AC - 5W	15	10
DC - 3W	15	10
Flow factor Kv(l/min)	0.4	0.7

Voltage & Power Consumption

	AC (W)				DC (W)	
	50 Hz		60 Hz			
V	8.5	5	6	3	6	3
6					•	•
12	•	•	•	•	•	•
24	•	•	•	•	•	•
110	•	•	•	•		
230	•	•	•	•		

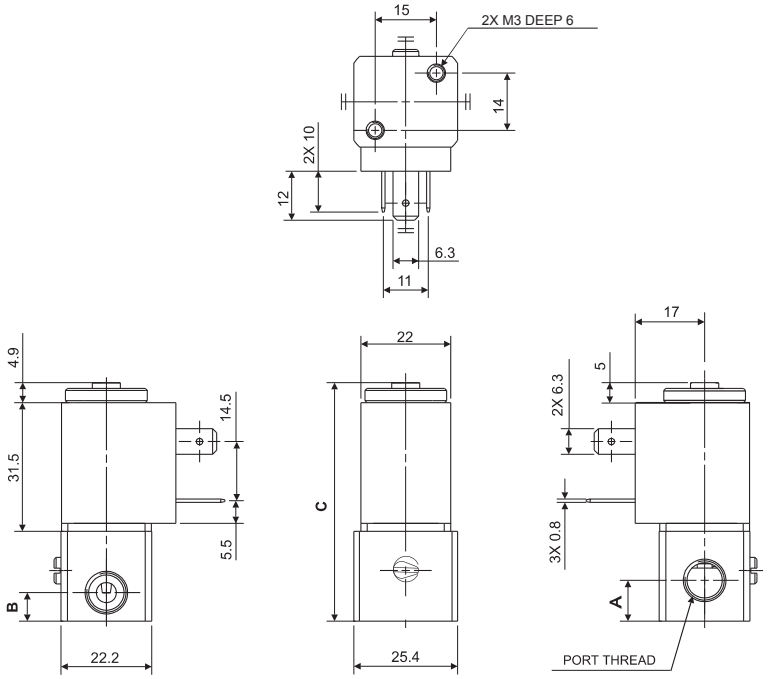
• Available options



GEM-SOL® | **A22** (G80-A) | 2 Way NC, NO

Dimensions

Port thread	A	B	C
M5	5.5	4	51.5
1/8"	10	7	58.5



How to Order

*** When ordering without coil, please define what current and pressure rating is needed (DC, AC)**

G80-A	-	BODY (1)		PORT		FUNCTION		ORIFICE		SEALS		MANUAL OVERRIDE		-	VOLTAGE		POWER		CONNECTOR	
		Aluminium *	**1**	**M5 ***	**00**	2W NC	1	1.0	1	NBR	N	None	0		without coil	0	No coil	0	with	1
		Brass	2	1/8" BSP	10	2W NO	2	1.2	2	FKM	V				6	1	AC8.5W 50Hz	1	**flying leads coil ***	**4**
		Stainless Steel	3	1/8" NPT	11			1.6	3	EPDM	E				12	2	AC6W 60Hz	2		
								2.0 (2)	4	**FFKM* (3)**	**K**				24	3	DC6W	3		
								2.4 (2)	5						110	5	AC5W 50Hz	4		
															230	7	AC3W 60Hz	5		
															other	9	DC3W	7		

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **G80-A-21011V0-321**

GEM-SOL® A22 (G80-A) direct operated, Brass, 1/8", 2W NC, 1.0mm orifice, FKM, no manual override, 24VAC 6W 60Hz, with connector.

(1) For Stainless Steel tube, add "**s**" : e.g **A22-☐s.....**
(2) NC only
(3) FFKM O-ring is available only upon request. When ordering FFKM seals, please consult with our technical sales department about O-ring compound.

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | A22 (G80-A)

3 Way NC, NO

Technical Data

Function	3 Way NC, NO
Ports size	1/8" BSP, NPT, M5,
Orifice size	See table
Pressure range	• See table • Valves for pressure higher than 12 bar cannot be supplied with manual override
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Aluminium, Stainless Steel AISI 316, Brass **Solenoid Operator*** Stainless Steel AISI 300 & 400 series, Brass * Standard operators are Stainless Steel **Seals:** NBR, FKM, EPDM
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector

Brass

Stainless Steel

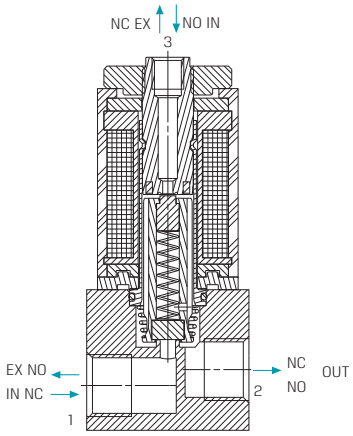
Aluminium

Max. Pressure (bar) 3 Way NC

Coil Current/Power	Orifice (mm)		
	1.0	1.2	1.6
AC - 8.5W	15	12	10.5
AC - 5W	12	10	7
DC - 6W	15	12	10.5
DC - 3W	12	10	7
Flow factor Kv(l/min)	0.5	0.65	1

Max. Pressure (bar) 3 Way NO

Coil Current/Power	Orifice(mm)	
	1.2	1.6
AC - 8.5W	12	8
AC - 5W	10	7
DC - 6W	12	8
DC - 3W	10	6
Flow factor Kv(l/min)	0.4	0.7



Voltage & Power Consumption

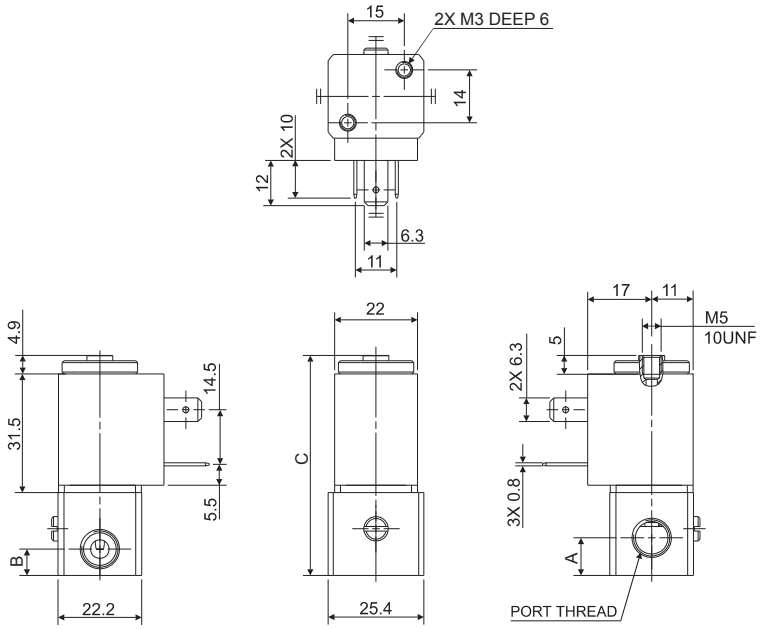
	AC (W)				DC (W)	
	50 Hz		60 Hz			
V	8.5	5	6	3	6	3
6					•	•
12	•	•	•	•	•	•
24	•	•	•	•	•	•
110	•	•	•	•		
230	•	•	•	•		

• Available options

GEM-SOL® | **A22** (G80-A) | 3 Way NC, NO

Dimensions

Port thread	A	B	C
M5	5.5	4	51.5
1/8"	10	7	58.5



How to Order

*** When ordering without coil, please define what current and pressure rating is needed (DC, AC)**

G80-A	-	BODY (1)	PORT	FUNCTION	ORIFICE	SEALS	MANUAL OVERRIDE	-	VOLTAGE	POWER	CONNECTOR
		Aluminium * 1	**M5 * 00**	3W NC 3	1.0 1	NBR N	None 0		without coil 0	No coil 0	with 1
		Brass 2	1/8" BSP 10	3W NO 4	1.2 2	FKM V			6 1	AC8.5W 50Hz 1	**flying leads coil * 4**
		Stainless Steel 3	1/8" NPT 11		1.6 3	EPDM E			12 2	AC6W 60Hz 2	
									24 3	DC6W 3	
									110 5	AC5W 50Hz 4	
									230 7	AC3W 60Hz 5	
									other 9	DC3W 7	
										Latch * (2) L	

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **G80-A-21032V0-231**

GEM-SOL® A22 (G80-A) direct operated, Brass, 1/8" BSP, 3W NC, 1.2 orifice, FKM, no manual override, 12VDC 6W with connector

(1) For Stainless Steel tube add "s" : e.g **A22-☐s.....**
(2) When ordering a latch valve, please contact our technical sales department

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | A32 (GEM-A)

1/8", 1/4" | 2 Way NC, NO

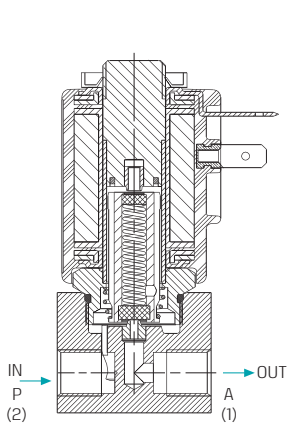
Technical Data

Function	2 Way NC, NO
Ports size	1/8" and 1/4" BSP & NPT
Orifice size	See table
Pressure range	• See table • Valves for pressure higher than 25 bar cannot be supplied with manual override
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Manual override:** Plastic (Reinforced Nylon), Brass screw or finger knob, Stainless Steel for Stainless Steel valves (1) Plastic manual override : Maximum pressure : 16 bar (2) Manual override is unavailable in 2W NO through base applications **Main Valve:** Brass or Stainless Steel AISI 316 **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM, FFKM, PTFE
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

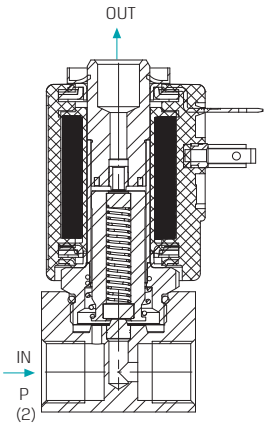
• Latch valves are available upon request
• Available with manifold bracket upon request.
Please contact our technical sales department.

Stainless Steel

Brass



2 Way NC



2 Way NO

Max. Pressure (bar) 2 Way NC

Coil Current/Power	Orifice (mm)						
	0.8	1.2	1.6	2.0	2.4	3.0	4.0
ADC *	60	50	35	20	15	10	5
AC8W/DC10W	80	80	60	38	30	18	10
AC5.5W	80	60	40	28	20	15	6
AC2.5W	60	50	35	20	15	9	5
DC5.5W	60	30	18	12	9	6	3
DC3.5W	40	20	12	8	6	4	2
Flow factor Kv(l/min)	0.5	1.1	1.7	2.5	3.5	4.5	5

Max. Pressure (bar) 2 Way NO

Coil Current/Power	Orifice (mm)					
	0.8	1.2	1.6	2.0	2.4	3.0
ADC *	25	25	25	20	15	10
Flow factor Kv(l/min)	0.5	1.1	1.4	2.5	3.0	3.5

* ADC valves are only suitable for use with AC8W or DC10W coils

Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•	•	•
12	•			•			●	●	•
24	•	●	•	•	•	•	•	•	•
48	•			•			•		
110	•			•	•		•		
120	•			●	•				
220	•	•	•	•			•		
230	•	●		•	•				
240	•			•			•		

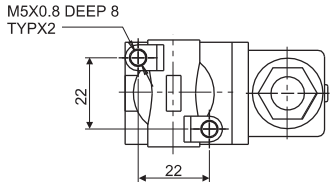
Available options

● Standard

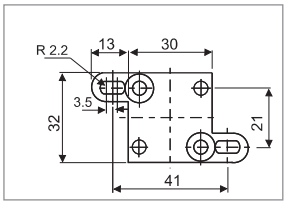
● Special

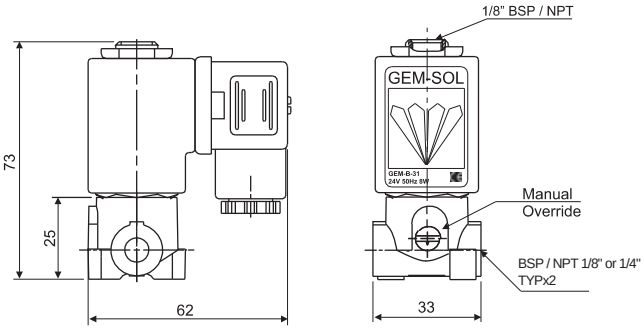
GEM-SOL® | **A32** (GEM-A) | 1/8", 1/4" | 2 Way NC, NO

Dimensions



Optional Mounting Bracket





How to Order

*** For available options, please refer to VOLTAGE & POWER CONSUMPTION table**

GEM-A	-	BODY	PORT	FUNCTION	ORIFICE	SEALS	MANUAL OVERRIDE	-	VOLTAGE	POWER	CONNECTOR
		Brass 2	1/8" BSP 10	2W NC 1	0.8 1	NBR N	None 0		without coil 0	No coil 0	with 1
		SST 3	1/8" NPT 11	**2W NO * 2**	1.2 2	**FKM * V**	**Plastic * (3) 1**		6 1	AC8W 50Hz 1	with LED 2
			1/4" BSP 20	2WNO-through base (1) 2a	1.6 3	EPDM E	Slot 2		12 2	AC8W 60Hz 2	**flying leads coil * 4**
			1/4" NPT 21		2.0 4	**FFKM *(2) K**	**Knob * 3**		24 3	DC 10W 3	with 1/2" Hub 5
					2.4 5	**PTFE * T**			48 4	AC 5.5W 50Hz 4	**surge protection with LED * 6**
					3.0 * 6				110 5	AC 5.5W 60Hz 5	connector with moulded cable 7
					4.0 * 7				120 6	AC 2.5W 50/60Hz 6	**other * 9**
									220 7A	DC 5.5W 7	
									230 7	DC 3.5W 8	
									240 8		
									Latch/other * (4) 9		

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-A-21015N2-331**

GEM-SOL® A32 (GEM-A) direct operated, Brass, 1/8"BSP, 2W NC, 2.4 orifice, NBR, slot manual override, 24VDC 10W with connector

(1) Option 2a : manual override is not available
(2) FFKM O-ring is available only upon request. When ordering FFKM seals, please consult with our technical sales department about O-ring compound
(3) Maximum pressure : 16 bar
(4) For specifying Latch type coil, please refer to A3P32 (GEM-A3P) valve - How to Order table

* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied

***** To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | A32 (GEM-A)

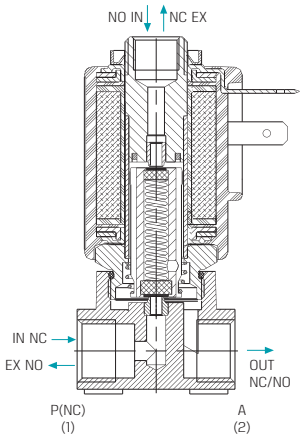
1/8", 1/4" | 3 Way NC, NO

Technical Data

Function	3 Way NC, NO
Ports size	1/8" and 1/4" BSP & NPT
Orifice size	See table
Pressure range	• See table • Valves for pressure higher than 25 bar cannot be supplied with manual override
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Manual override:** Plastic (Reinforced Nylon), Brass screw or finger knob, Stainless Steel for Stainless Steel valves (1) Plastic manual override : Maximum pressure : 16 bar (2) Manual override is unavailable in 3 Way NO through base applications **Main Valve:** Brass or Stainless Steel AISI 316 **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM, FFKM, PTFE
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• Latch valves are available upon request
• Available with manifold bracket upon request.
Please contact our technical sales department.

Stainless Steel Brass



Max. Pressure (bar) 3 Way NC

Coil Current/Power	Orifice (mm)					
	0.8	1.2	1.6	2.0	2.4	3.0
ADC *	23	20	15	10	8	5.5
AC8W, DC10W	35	30	17	14	10	6
AC5.5W	23	20	15	10	8	5.5
AC2.5W DC5.5W DC3.5W	20	16	10	9	5	4
Flow factor Kv(l/min)	0.6	1.1	1.7	2.5	3.5	4.5

Max. Pressure (bar) 3 Way NO

Coil Current/Power	Orifice (mm)					
	0.8	1.2	1.6	2.0	2.4	3.0
ADC *	25	20	15	11	8	6
AC/8W DC/10W	30	22	17	12	10	7
AC/5.5W,DC/5.5W	25	20	15	11	8	6
AC/2.5W,DC/3.5W	20	18	12	8	6	4
Flow factor Kv(l/min)	0.6	1	1.4	2.2	3.0	3.5

* ADC valves are only suitable for use with AC8W or DC10W coils.

Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•	•	•
12	•			•			●	●	•
24	•	●	•	•	•	•	•	•	•
48	•			•			•		
110	•			•	•		•		
120	•			●	•				
220	•	•	•	•			•		
230	•	●		•	•				
240	•			•			•		

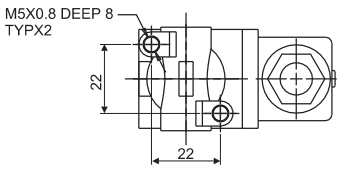
Available options

● Standard

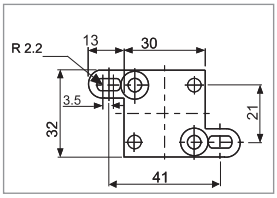
● Special

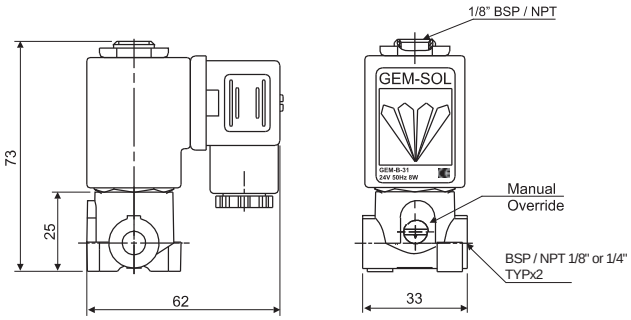
GEM-SOL® | A32 (GEM-A) | 1/8", 1/4" | 3 Way NC, NO

Dimensions



Optional Mounting Bracket





How to Order

*** For available options, please refer to VOLTAGE & POWER CONSUMPTION table**

GEM-A	-	BODY	PORT	FUNCTION	ORIFICE	SEALS	MANUAL OVERRIDE	-	VOLTAGE	POWER	CONNECTOR
		Brass 2	1/8" BSP 10	3W NC 3	0.8 1	NBR N	None 0		without coil 0	No coil 0	with 1
		SST 3	1/8" NPT 11	**3W NO * 4**	1.2 2	**FKM * V**	**Plastic * (3) 1**		6 1	AC8W 50Hz 1	with LED 2
			1/4" BSP 20	**3WNO (1) through base* 4a**	1.6 3	EPDM E	Slot 2		12 2	AC8W 60Hz 2	**flying leads coil * 4**
			1/4" NPT 21		2.0 4	**FFKM *(2) K**	**Knob * 3**		24 3	DC 10W 3	with 1/2" Hub 5
					2.4 5	**PTFE * T**			48 4	AC 5.5W 50Hz 4	**surge protection with LED * 6**
					3.0 * 6				110 5	AC 5.5W 60Hz 5	connector with moulded cable 7
									120 6	AC 2.5W 50/60Hz 6	**other * 9**
									220 7A	DC 5.5W 7	
									230 7	DC 3.5W 8	
									240 8		
									Latch/other * (4) 9		

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-A-21035N2-331**

GEM-SOL® A32 (GEM-A) direct operated, Brass, 1/8" BSP, 3W NC, 2.4 orifice, NBR, slot manual override, 24VDC 10W with connector

(1) Option 4a : manual override is not available
(2) FFKM O-ring is available only upon request. When ordering FFKM seals, please consult with our technical sales department about O-ring compound
(3) Maximum pressure : 16 bar
(4) For specifying Latch type coil, please refer to A3P32 (GEM-A3P) valve - How to Order table

* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | I32 (GEM-I)

Inline 1/8", 1/4" | 2 Way NC, NO

Technical Data

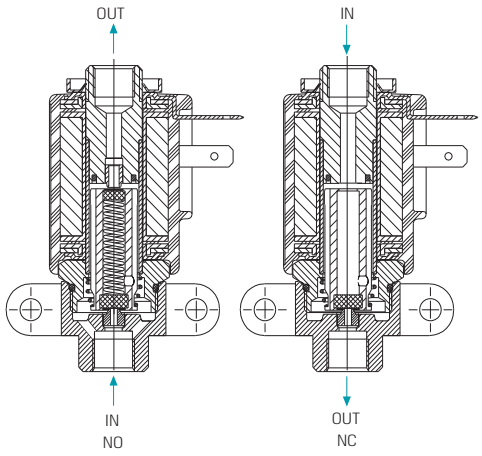
Function	2 Way NC, NO
Ports size	1/8", 1/4" BSP & NPT
Orifice size	See table
Pressure range	See table • Higher pressures are available
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Brass **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• Latch valves are available upon request.

Inline

Max. Pressure (bar) 2 Way NC

Coil Current/Power	Orifice (mm)			
	0.8	1.6	2.4	3.0
ADC *	40	30	17	10
AC8W, DC10W	45	37	20	12
AC5.5W	40	32	16	8
DC5.5W	35	30	12	6
Flow factor Kv(l/min)	0.5	1.7	3.5	4.5



Max. Pressure (bar) 2 Way NO

Coil Current/Power	Orifice (mm)			
	0.8	1.6	2.4	3.0
ADC *	32	27	13	9
AC8W, DC10W	35	32	18	12
Flow factor Kv(l/min)	0.5	1.6	3.2	3.8

* ADC valves are only suitable for use with AC8W or DC10W coils.

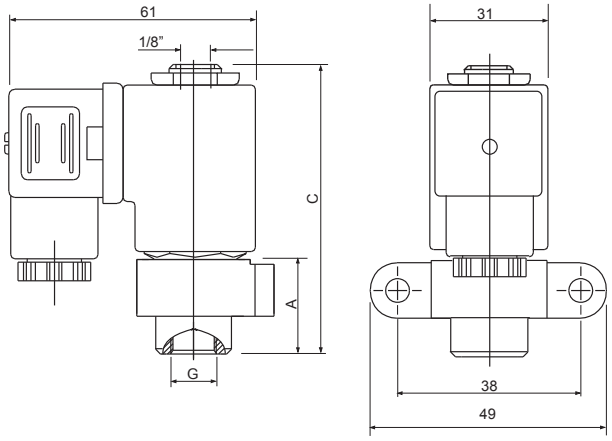
Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•	•	
12	•			•			•	•	
24	•	•		•	•		•	•	
48	•			•			•		
110	•			•	•		•		
120	•			•	•				
220	•	•		•			•		
230	•	•		•	•				
240	•			•			•		

• Available options

GEM-SOL® | **I32** (GEM-I) | Inline 1/8", 1/4" | 2 Way NC, NO

Dimensions



Size (G)	A	C
1/8"	20	68
1/4"	23	88

"INLINE" Mounting

How to Order

GEM-I	-	BODY	PORT	FUNCTION	ORIFICE	SEALS	-	VOLTAGE	POWER	CONNECTOR
		"Inline" mounting 5	1/8" BSP 10	2W NC 1	0.8 1	NBR N		without coil 0	No coil 0	with 1
			1/8" NPT * 11	2W NO 2	1.2 2	FKM V		6 1	AC8W 50Hz 1	with LED 2
			1/4" BSP * 20		1.6 3	EPDM E		12 2	AC8W 60Hz 2	**flying leads coil * 4**
			1/4" NPT * 21		2.0 4			24 3	DC10W 3	with 1/2" Hub 5
					2.4 5			48 4	AC5.5W 50Hz 4	**surge protection with LED * 6**
					3.0 6			110 5	AC5.5W 60Hz 5	connector with moulded cable 7
								120 6	DC5.5W 7	other 9
								220 7A		
								230 7		
								240 8		
								Latch/other * (1) 9		

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-I-51015N-331**

GEM-SOL® I32 (GEM-I) direct operated, Inline Mounting, 1/8" BSP, 2W NC,
2.4 orifice, NBR, 24VDC 10W with connector.

(1) When specifying Latch type coil, please refer to A3P32 (GEM-A3P) valve - How to Order table.

* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied.

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | AL32 (GEM-A | Large orifice)

Large orifice 1/4" | 2 Way NC, NO

Technical Data

Function	2 Way NC, NO
Ports size	1/4" BSP & NPT
Orifice size	See table
Pressure range	See table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Brass or Stainless Steel AISI 316 **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** FKM, EPDM, FFKM, PTFE
Recommended use	Vacuum application
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• Latch valves are available upon request.

Stainless Steel

Brass

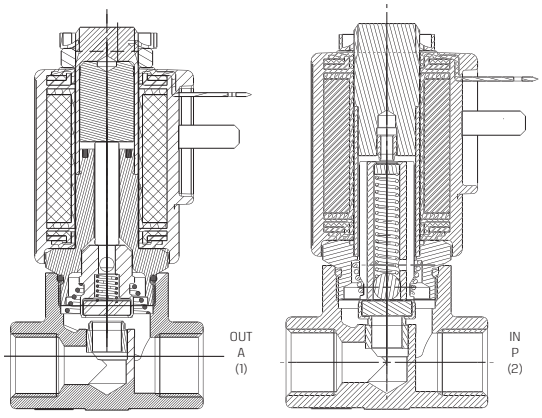
Max. Pressure (bar) 2 Way NC

Coil Current/Power		
	6.0	8.0
AC8W	3.8	2.5
AC5.5W	3	2
DC10W	3.8	1.5
DC5.5W	2	1
Flow factor Kv(l/min)	6	10

Max. Pressure (bar) 2 Way NO

Coil Current/Power	
	6.0
ADC *	2
AC8W, DC10W	2
Flow factor Kv(l/min)	6

* ADC valves are only suitable for use with AC8W or DC10W coils.



← Flow direction

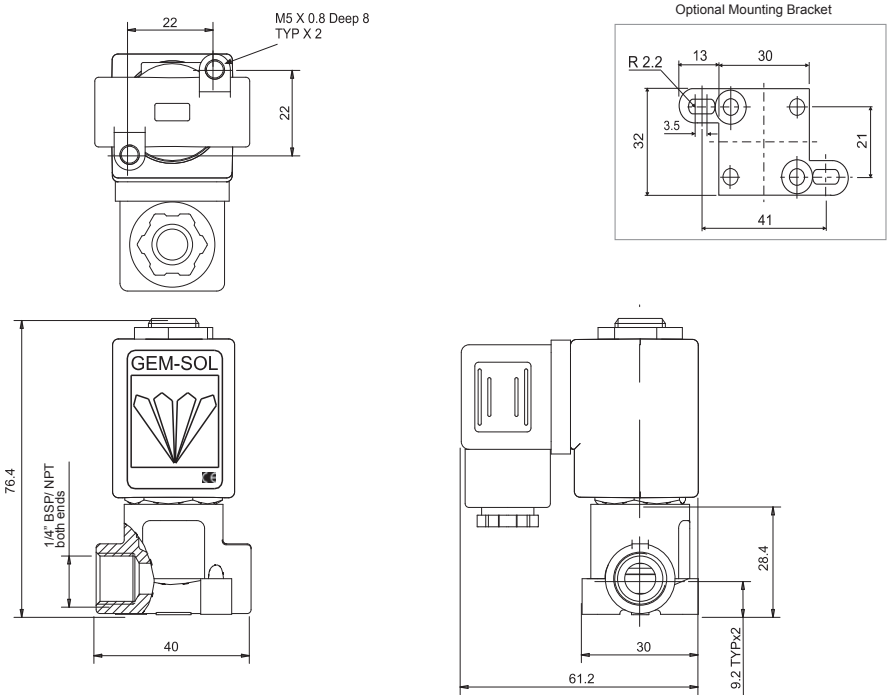
Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							• •	•	
12	• •			• •			• •	•	
24	• •	•		• •	•		• •	•	
48	• •			• •			• •		
110	• •			• •	•		• •		
120	• •			• •	•				
220	• •	•		• •			• •		
230	• •	•		• •	•				
240	• •			• •			• •		

Available options :
• NC valves
• NO valves

GEM-SOL® | **AL32** (GEM-A) | Large orifice 1/4" | 2 Way NC, NO

Dimensions



How to Order

GEM-A	-	BODY		PORT		FUNCTION		ORIFICE		SEALS		-	VOLTAGE		POWER		CONNECTOR	
		Brass	2	1/4" BSP	20	2W NC	1	6.0	8	FKM	V		without coil	0	No coil	0	with	1
		Stainless Steel *	**3**	1/4" NPT	21	2W NO	2	8.0 (1)	a	EPDM	E		6	1	AC8W 50Hz	1	with LED	2
						2W NO through base *	**2a**			FFKM (2)	K		12	2	AC8W 60Hz	2	**flying leads coil ***	**4**
										PTFE *	**T**		24	3	DC10W	3	with 1/2" Hub	5
													48	4	AC5.5W 50Hz (4)	4	**surge protection with LED ***	**6**
													110	5	AC5.5W 60Hz (4)	5	connector with moulded cable	7
													120	6	DC5.5W (4)	7	other	9
													220	7A				
													230	7				
													240	8				
													Latch/other * (3)	**9**				

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-A-2201aV-331**

GEM-SOL® AL32 (GEM-A) direct operated, Brass, 1/4" BSP, 2W NC, 8.0 orifice, FKM, 24VDC 10W with connector.

(1) Not available in NO valve
(2) FFKM O-ring is available only upon request. When ordering FFKM seals, please consult with our technical sales department about O-ring compound
(3 When specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table.
(4) NC only

* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied.

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | AL32 (GEM-A | Large orifice)

Large orifice 1/4" | 3 Way NC, NO

Technical Data

Function	3 Way NC, NO
Ports size	1/4" BSP & NPT
Orifice size	Bottom orifice : 6.0mm, 8.0mm Top orifice : 3mm, 5mm (see table)
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Brass or Stainless Steel AISI 316 **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** FKM, EPDM, FFKM
Media	Air, water
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• These valves have been especially designed for electronic automatic vacuum milking systems.

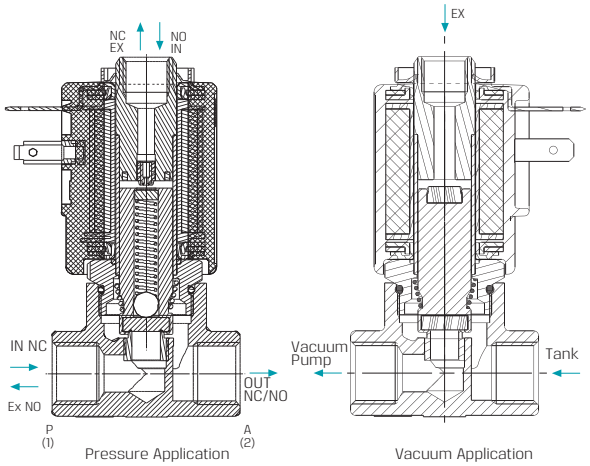
Brass | pressure | 6mm orifice

Vacuum Application (bar)

Function		
	6.0	8.0
3 Way NC	-1	-1
3 Way NO	-1 to 0.5	NA
Flow factor Kv(l/min)	6	10

Pressure Application (bar)

Function		
	6.0	8.0
3 Way NC	1.6	0.5
3 Way NO (for 3mm top orifice)	1.5	NA
Flow factor Kv(l/min)	6	10



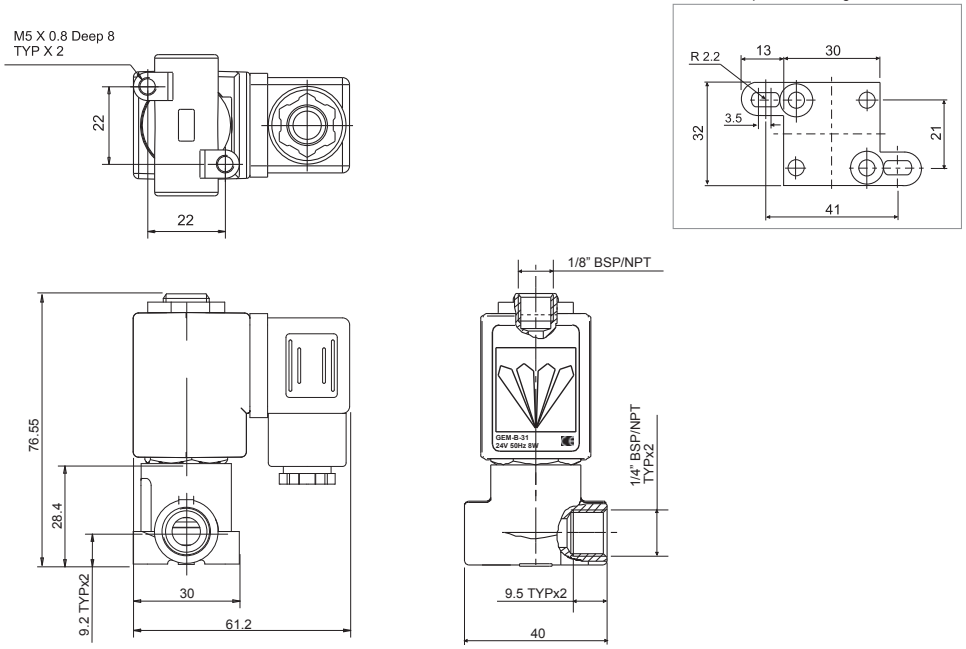
Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•		
12	•			•			•		
24	•			•			•		
48	•			•			•		
110	•			•			•		
120	•			•					
220	•			•			•		
230	•			•					
240	•			•			•		

• Available options

GEM-SOL® | **AL32** (GEM-A) | Large orifice 1/4" | 3 Way NC, NO

Dimensions



How to Order

GEM-A	-	BODY	PORT	FUNCTION	PRESSURE	ORIFICE [1]	SEALS	-	VOLTAGE	POWER	CONNECTOR
		Brass 2	1/4" BSP 20	3W NC 3	Pressure 1	6.0 8	FKM V		without coil 0	No coil 0	with 1
		Stainless Steel * 3	1/4" NPT 21	3W NO 4	Vacuum 2	8.0 [2] a	EPDM E		6 1	AC8W 50Hz 1	with LED 2
							FFKM K		12 2	AC8W 60Hz 2	**flying leads coil * 4**
									24 3	DC10W 3	with 1/2" Hub 5
									48 4		**surge protection with LED * 6**
									110 5		connector with moulded cable 7
									120 6		other 9
									220 7A		
									230 7		
									240 8		
									Latch/other * [3] 9		

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Orifice Table (mm)

Current	Bottom	Top
DC	6	5
DC	8	5
AC	6	3

Example : **GEM-A-220318V-331**

GEM-SOL® AL32 (GEM-A) direct operated, Brass, 1/4" BSP, 3W NC, pressure, 6.0 orifice, FKM, 24VDC 10W with connector.

(1) See Orifice table
(2) Not available in NO valve
(3) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table.
* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied.

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | L32 (GEM-L)

Low pressure flows 1/4"-1/2" | 2 Way NC, NO

Technical Data

Function	2 Way NC, NO
Ports size	1/4", 3/8", 1/2" BSP & NPT
Pressure range	See table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Brass Stainless Steel AISI 316 **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM
Media	Designed for use in LP gas systems. Also in air, water and vacuum systems : (high flow at low pressure)
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

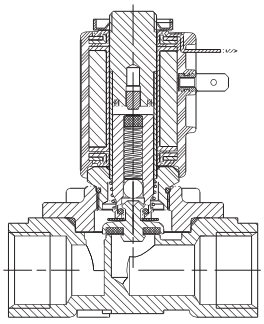
• Latch valves are available upon request.

Brass

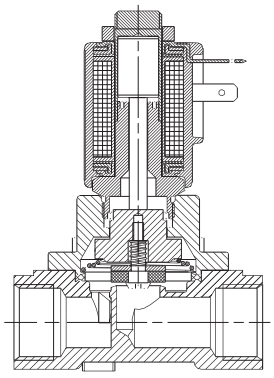
Stainless Steel

Pressure (bar) & Flow NC, NO

Size	Orifice (mm)	Pressure (bar)			Kv (l/min)
		AC	DC	NO	
1/4"	8	1.5	0.7	0.5	12
3/8"	8	1.5	0.7	0.5	16
1/2"	12	0.8	0.4	0.3	35



2 Way NC



2 Way NO

→ Flow direction

Voltage & Power Consumption

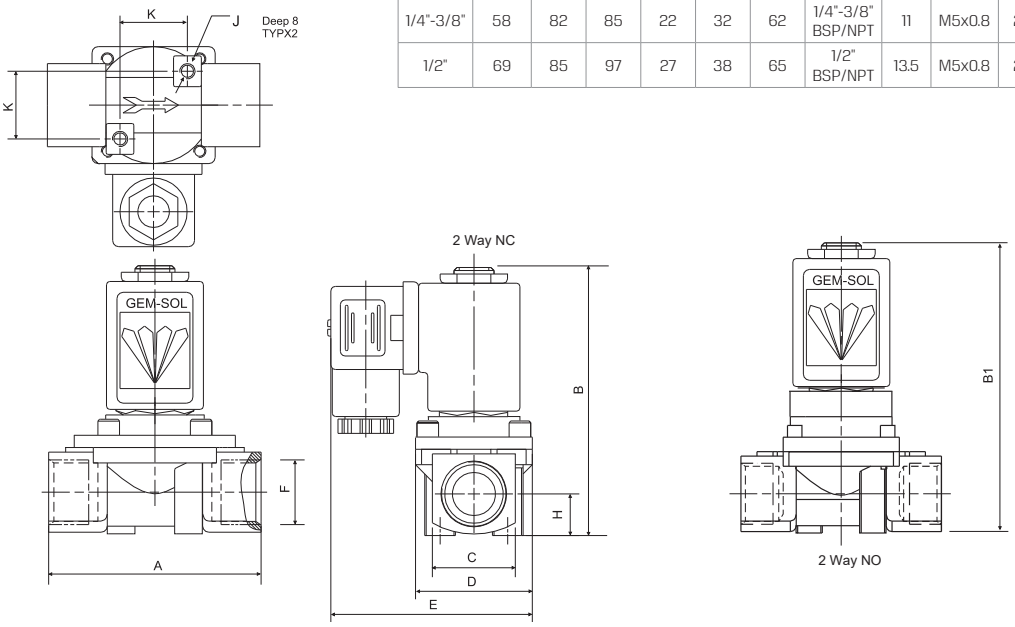
	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•		
12	•			•			•		
24	•			•			•		
48	•			•			•		
110	•			•			•		
120	•			•					
220	•			•			•		
230	•			•					
240	•			•			•		

• Available options

GEM-SOL® | **L32** (GEM-L) | Low pressure flows 1/4"-1/2" | 2 Way NC, NO

Dimensions

Size	A	B	B1	C	D	E	F	H	J	K	Weight with coil
1/4"-3/8"	58	82	85	22	32	62	1/4"-3/8" BSP/NPT	11	M5x0.8	22	394gr
1/2"	69	85	97	27	38	65	1/2" BSP/NPT	13.5	M5x0.8	22	484gr



How to Order

*** When ordering without coil, please define what current and pressure rating is needed (DC, AC)**

GEM-L	-	BODY	PORT	FUNCTION	SEALS	-	VOLTAGE	POWER	CONNECTOR
		Brass 2	1/4" BSP 20	2W NC 1	NBR N		without coil 0	No coil 0	with 1
		Stainless Steel * 3	1/4" NPT 21	**2W NO * 2**	FKM V		6 1	AC8W 50Hz 1	with LED 2
			3/8" BSP * 30		EPDM E		12 2	AC8W 60Hz 2	**flying leads coil * 4**
			3/8" NPT * 31				24 3	DC10W 3	with 1/2" Hub 5
			1/2" BSP 40				48 4		**surge protection with LED * 6**
			1/2" NPT 41				110 5		connector with moulded cable 7
							120 6		other 9
							220 7A		
							230 7		
							240 8		
							Latch/other * (1) 9		

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-L-2201N-331**

GEM-SOL® L32 (GEM-L) direct operated, Brass, 1/4"BSP, 2W NC, NBR seals, 24VDC 10W with connector

(1) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table.

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | L45 (GEM-L) Special

Low pressure flows 3/4", 1" | 2 Way NC

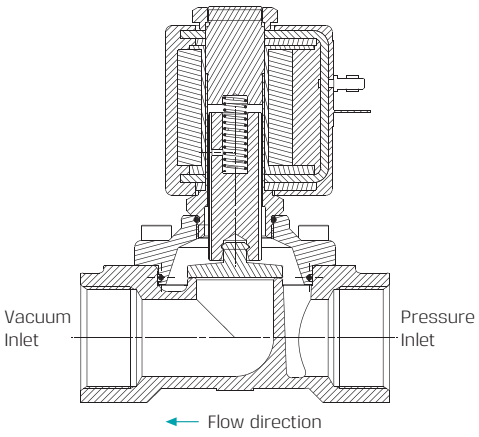
Technical Data

Function	2 Way NC
Ports size	3/4", 1" BSP & NPT
Pressure range	See table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Brass Stainless Steel AISI 316 **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM, Viton™ Extreme™ ETP-600S
Media	Designed for use in LP gas systems. Also in air, water and vacuum systems : (high flow at low pressure)
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

Brass | 1"

Pressure (bar) & Flow NC

Size	Orifice (mm)	Pressure (bar)	Kv (l/min)
3/4"	20	-1 to 1	80
1"	25		125

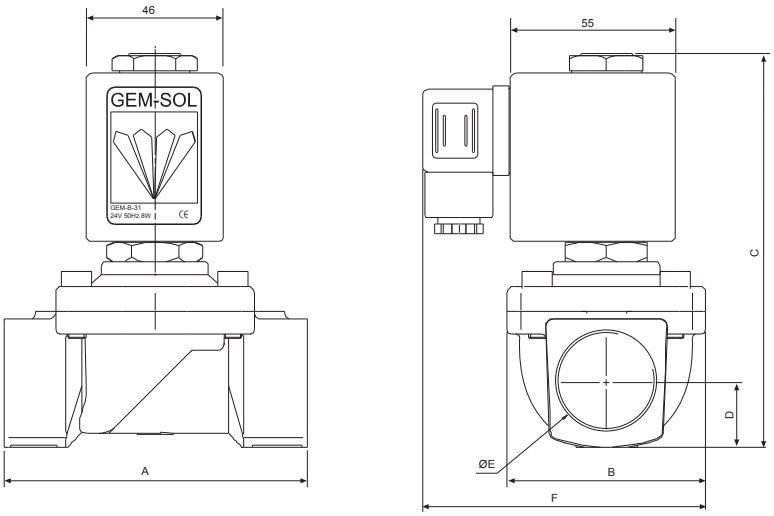


Voltage & Power Consumption

	AC (W)		DC (W)
	50 Hz	60 Hz	
V	38	38	38
12			•
24	•		•
120		•	•
230	•		•

• Available options

Dimensions



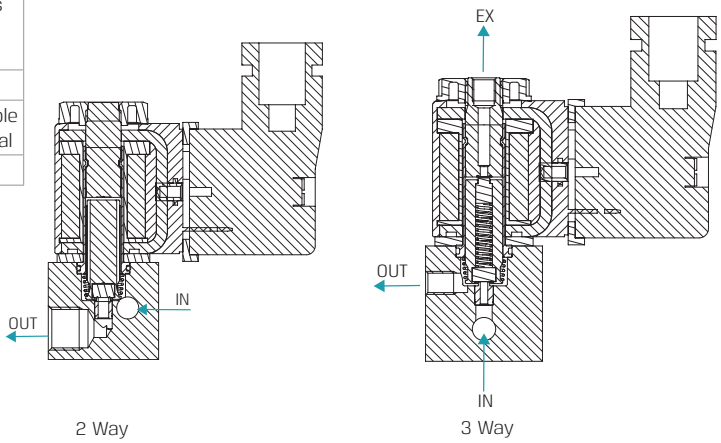
Size	A	B	C	D	E	F	Weight with coil
3/4"	90	55	119.5	17	3/4" BSP/NPT	87.7	87.7
1"	100	65	128.5	21	1" BSP/NPT	92.7	92.7

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | M22 (G80-M) Special
Manifold

Technical Data

Function	2 Way, 3 Way
Orifice size	See table
Ports size	1/8" BSP & NPT
Pressure range	See table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Mounting	Coil can be mounted in 2 positions at 180° apart and the coil plug can rotate to 2 positions at 180°.
Materials in contact with media	**Main Valve:** Aluminium **Solenoid Operator:** Stainless Steel AISI 300 & 400 series, Brass **Seals:** NBR, FKM, EPDM, FFKM
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector



2 Way 3 Way

Max. Pressure (bar) 2 Way NC

Coil Current/Power	Orifice (mm)			
	1.2	1.6	* 2.0 (1)	* 2.4 (1)
AC - 8.5W	35	35	12	10
AC - 5W	30	15	8	6
DC - 6W	35	20	12	10
DC - 3W	30	15	5	4
Flow factor Kv(l/min)	0.65	1.2	1.6	2

* Bottom orifice only. Top orifice - up to 1.6
(1) For 2 Way NC only

Max. Pressure (bar) 3 Way NC

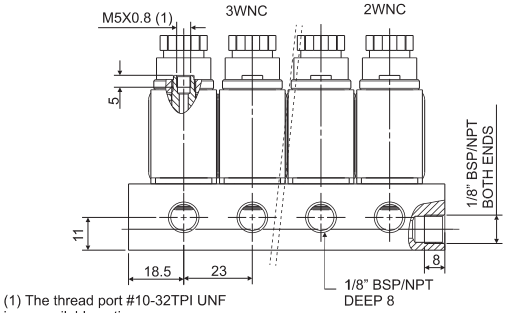
Coil Current/Power	Orifice (mm)	
	1.2	1.6
AC - 8.5W	12	10.5
AC - 5W	10	7
DC - 6W	12	10.5
DC - 3W	10	7
Flow factor Kv(l/min)	0.65	1

Voltage & Power Consumption

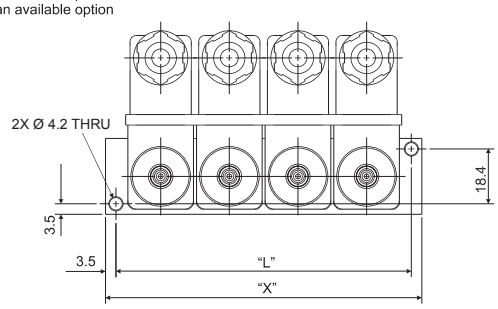
	AC (W)				DC (W)	
	50 Hz		60 Hz			
V	8.5	5	6	3	6	3
6					•	•
12	•	•	•	•	•	•
24	•	•	•	•	•	•
110	•	•	•	•		
230	•	•	•	•		

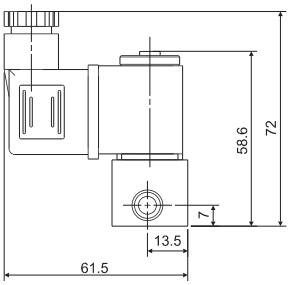
• Available options

Dimensions



(1) The thread port #10-32TPI UNF is an available option





Station		
Station	X(mm)	L(mm)
2	60	53
3	83	76
4	106	99
5	129	122
6	152	145
7	175	168
8	198	191
9	221	214
10	244	237
11	257	250
12	270	263

* To order manifolds manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | V/VL32 (GEM-V/VL)
Modular Manifold Installation

Technical Data

Function	2 Way, 3 Way NC, NO
Pressure range	• See table • Valves for pressure higher than 25 bar cannot be supplied with manual override.
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Mounting	Vertical, on sub-base, 2 screws M4. Any number of valves on the same sub-base plate. Any combination of 2 Way, 3 Way NC or NO valves may be grouped together. * Standard valve orientation : Manual override and base port on the same side
Materials in contact with media	**Manual override:** Plastic (Reinforced Nylon), Brass screw or finger knob. NOa* - manual override is not available. *pressure is supplied through the base **Main Valve:** Brass **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM, FFKM, PTFE
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• Latch valves are available upon request.
• Pressure separation plug is available.

Brass | 5 valves

Two types of NO valves :

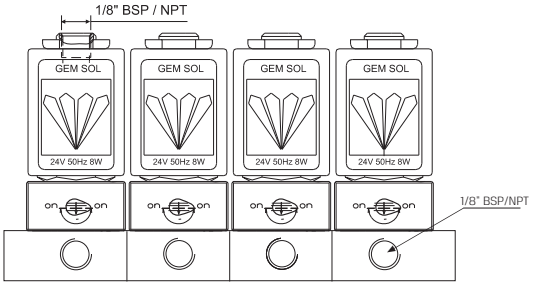
• Supply pressure is through the base like NC valves. These valves can be combined in a standard manifold. They are not supplied with manual override.

• Supply pressure is through the tube. These valves cannot be combined in a standard manifold. They are supplied with manual override.

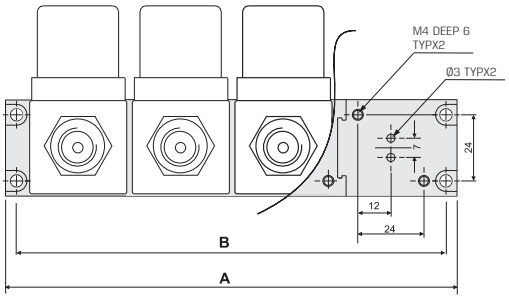
When using a manifold with more than 8 stations, it is advisable to use two air supplies, one at each end.

GEM-SOL® | **V/VL32** (GEM-V/VL) | Modular Manifold Installation

Dimensions



*Standard valve orientation : Manual override and base port on the same side



A = 80 + (n - 2) x 33

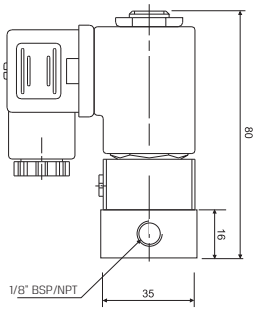
B = 72 + (n - 2) x 33

n = the number of valves

Example : For 6 Valves

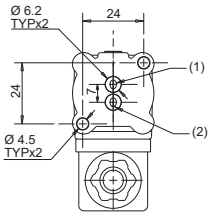
A = 80 + 4 x 33 = 212

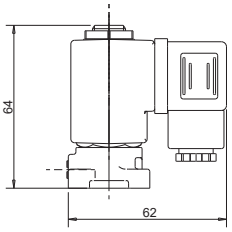
B = 72 + 4 x 33 = 204

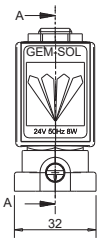


*Pressure separation plug can be ordered on request.

TYPE V32

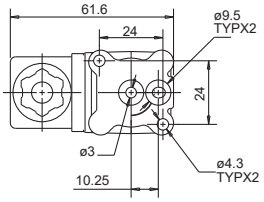


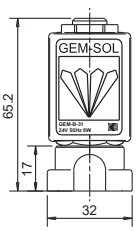


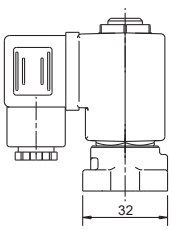


TYPE VL32

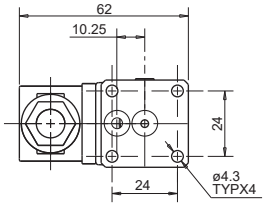
Brass Forging
2 Way / 3 Way NC

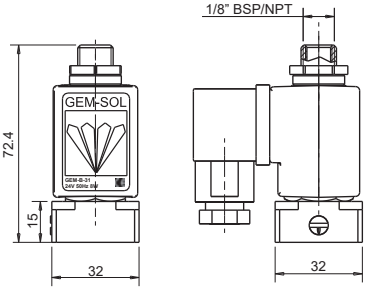






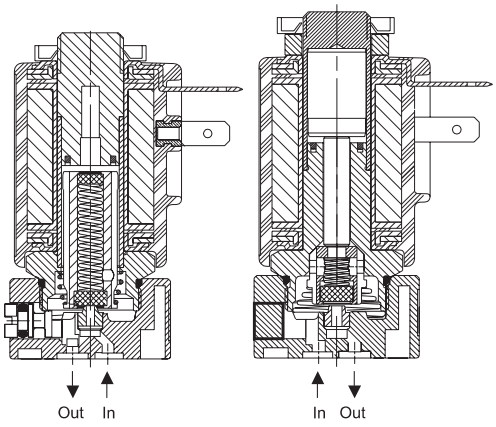
Aluminium / Stainless Steel
3 Way NO through base



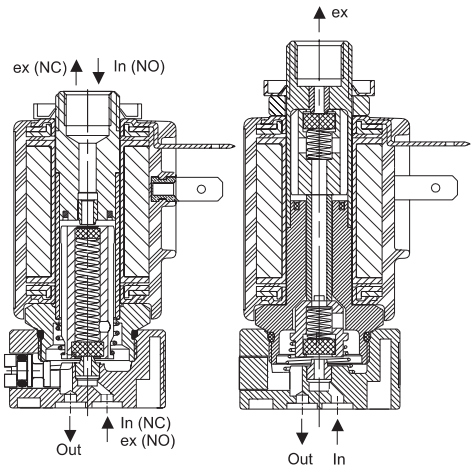


GEM-SOL® | V/VL32 (GEM-V/VL) | Modular Manifold Installation

Type V32 (GEM-V) 2 Way, 3 Way NC, NO

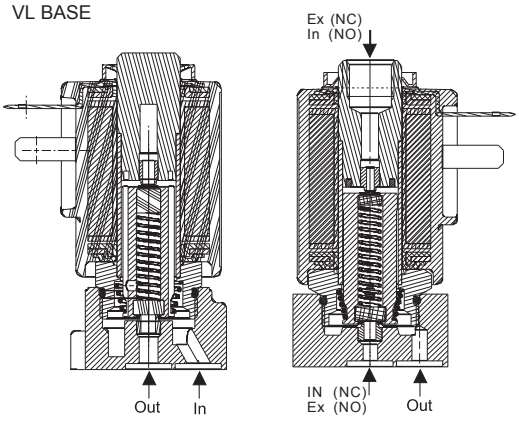


2 Way NC — 2 Way NO through base



3 Way NC/NO — 3 Way NO through base

Type VL32 (GEM-VL) 2 Way, 3 Way NC, NO



2W NC (forge) — 3W NC/NO

Size : Any number of stations, built from three basic components: left end section, right end section and middle section.
Assembly : Push in and turn 90° clockwise
Port size : 1/8" BSP or NPT
Material : Brass

How to Order manifold components

GEM-V	-	PORT		COMPONENT		BODY	
		1/8" BSP	10	Left	1	Brass	2
		1/8" NPT	11	Right	2		
				Middle	3		

Example : **GEM-V-1022**
V32 (GEM-V) type manifold 1/8" BSP, right component, Brass body

Max. Pressure (bar) 2 Way, 3 Way NC

Coil Current/Power	Orifice (mm)						
	0.8	1.2	1.6	2.0	2.4	3.0	4.0 (1)
• ADC	23	20	15	10	8	5.5	2.5
AC8W, DC10W	35	30	17	14	10	6	3
AC5.5W	23	20	15	10	8	5.5	2.5
AC2.5W, DC5.5W, DC3.5W	20	16	10	9	5	4	1.6
Flow factor Kv(l/min)	0.6	1.1	1.7	2.5	3.5	4.5	5

Max. Pressure (bar) 2 Way, 3 Way NO

Coil Current/Power	Orifice (mm)						
	0.8	1.2	1.6	2.0	2.4	3.0	4.0 (1)
• ADC	25	20	15	11	8	6	4.5
*AC8W, DC10W	30	22	17	12	10	7	4.5
*AC5.5W, DC5.5W	25	20	15	11	8	6	
*AC2.5W, DC3.5W	20	18	12	8	6	4	
Flow factor Kv(l/min)	0.6	1	1.4	2.2	3.0	3.5	5

(1) 4.0 - Bottom orifice only. Available in 2 Way only
* These are not applicable for NO through base valves
• ADC valves are only suitable for use with AC8W or DC10W coils.

Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•	•	•
12	•			•			•	•	•
24	•	•	•	•	•	•	•	•	•
48	•			•			•		
110	•			•	•		•		
120	•			•	•				
220	•	•	•	•			•		
230	•	•		•	•				
240	•			•			•		

• Available options

GEM-SOL® | V/VL32 (GEM-V/VL) | Modular Manifold Installation

How to Order | V32 (GEM-V) Manifold | all valves having identical functions

GEM-V	–	No. of VALVES / No. of STATIONS		–	PORT		BODY		FUNCTION		ORIFICE		SEALS		MANUAL OVERRIDE		–	VOLTAGE		POWER		CONNECTOR	
		specify quantity	specify quantity		1/8" BSP	10	Brass	2	2W NC	1	0.8	1	NBR	N	None	0		without coil	0	No coil	0	with	1
			without manifold	0	1/8" NPT	11			2W NO	2	1.2	2	FKM	V	**Plastic ***	**1**		6	1	AC8W 50Hz	1	with LED	2
									2W NO [1]	2a	1.6	3	EPDM	E	Slot	2		12	2	AC8W 60Hz	2	**flying leads coil ***	**4**
									3W NC	3	2.0	4	FFKM	K	**Knob ***	**3**		24	3	DC10W	3	with 1/2" Hub	5
									3W NO	4	2.4	5	**PTFE ***	**T**	Push	4		48	4	AC5.5W 50Hz	4	**surge protection with LED ***	**6**
									3W NO * [1]	**4a**	4.0 [2]	7			Push lock	5		110	5	AC5.5W 60Hz	5	connector with moulded cable	7
																		120	6	AC2.5W 50/60Hz	6	other	9
																		220	7A	DC5.5W	7		
																		230	7	DC3.5W	8		
																		240	8				
																		Latch/ other * [3]	**9**				

Example : GEM-V-6/6-10232V2-331

GEM-SOL® V32 (GEM-V) direct operated 6/6 Stations, 1/8" BSP, Brass, 3WNC, 1.2, FKM, slot manual override, 24VDC 10W with connector

(1) Supply pressure through base
(2) 4.0 - Bottom orifice only. Available in 2 Way only
(3) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

How to Order | V32 (GEM-V) | individual valves with independent functions

GEM-V	–	No. of VALVES / No. of STATIONS	–	PORT	BODY	FUNCTION	ORIFICE	SEALS	MANUAL OVERRIDE	ADDITIONAL FEATURE	–	VOLTAGE	POWER	CONNECTOR
		specify quantity / specify quantity		As above table										

V32 (GEM-V) Direct Operated sub-base :

Example : **GEM-V-3/6-10242N0-331** : 3/6 Stations with 1/8" BSP Brass, 3WNO, 1.2, NBR, no M/O, 24VDC 10W with connector
Example : **GEM-V-1/6-10212N0-331** : 1/6 Stations with 1/8" BSP Brass, 2WNC, 1.2, NBR, no M/O, 24VDC 10W with connector

How to Order | V32 (GEM-V) Body

GEM-V-BODY	–	PORT		BODY		FUNCTION		ORIFICE		SEALS		MANUAL OVERRIDE		–	VOLTAGE		POWER		CONNECTOR	
		1/8" BSP	10	Brass	2	2W NC	1	0.8	1	NBR	N	None	0		without coil	0	No coil	0	with	1
		1/8" NPT	11			2W NO	2	1.2	2	FKM	V	**Plastic ***	**1**		6	1	AC8W 50Hz	1	with LED	2
						2W NO [1]	2a	1.6	3	EPDM	E	Slot	2		12	2	AC8W 60Hz	2	**flying leads coil ***	**4**
						3W NC	3	2.0	4	FFKM	K	**Knob ***	**3**		24	3	DC10W	3	with 1/2" Hub	5
						3W NO	4	2.4	5	**PTFE ***	**T**	Push	4		48	4	AC5.5W 50Hz	4	**surge protection with LED ***	**6**
						3W NO * [1]	**4a**	4.0 [2]	7			Push lock	5		110	5	AC5.5W 60Hz	5	connector with moulded cable	7
															120	6	AC2.5W 50/60Hz	6	other	9
															220	7A	DC5.5W	7		
															230	7	DC3.5W	8		
															240	8				
															Latch/ other * [3]	**9**				

Example : GEM-V-BODY-10232V2-331

GEM-SOL® V32-Body (GEM-V-BODY), direct operated, 1/8" BSP, Brass, 3WNC, 1.2, FKM, slot manual override, 24 VDC 10W with connector

(1) Supply pressure through base
(2) 4.0 - Bottom orifice only. Available in 2 Way only
(3) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

How to Order | VL32 (GEM-VL)

GEM-VL	–	PORT		BODY		FUNCTION		ORIFICE		SEALS		MANUAL OVERRIDE		–	VOLTAGE		POWER		CONNECTOR	
		1/8" BSP	10	Brass	2	2W NC	1	0.8	1	NBR	N	None	0		without coil	0	No coil	0	with	1
		1/8" NPT	11			2W NO	2	1.2	2	FKM	V	**Plastic ***	**1**		6	1	AC8W 50Hz	1	with LED	2
						2W NO [1]	2a	1.6	3	EPDM	E	Slot	2		12	2	AC8W 60Hz	2	**flying leads coil ***	**4**
						3W NC	3	2.0	4	FFKM	K	**Knob ***	**3**		24	3	DC10W	3	with 1/2" Hub	5
						3W NO	4	2.4	5	**PTFE ***	**T**	Push	4		48	4	AC5.5W 50Hz	4	**surge protection with LED ***	**6**
						3W NO * [1]	**4a**	4.0 [2]	7			Push lock	5		110	5	AC5.5W 60Hz	5	connector with moulded cable	7
															120	6	AC2.5W 50/60Hz	6	other	9
															220	7A	DC5.5W	7		
															230	7	DC3.5W	8		
															240	8				
															Latch/ other * [3]	**9**				

Example : GEM-VL-10211V0-331

GEM-SOL® VL32 (GEM-VL) direct operated, 1/8" BSP, Brass, 2WNC, 0.8, FKM, no manual override, 24 VDC 10W with connector

(1) Supply pressure through base
(2) 4.0 - Bottom orifice only. Available in 2 Way only
(3) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

* To order manifolds manufactured according to your specific requirements, please contact our technical sales department.

Pilot Operated

GEM-SOL® | S32 (GEM-S)

1/4"-1" | 2 Way NC, NO

Brass | NC |
knob manual override

Brass | NO |
slot manual override

Stainless Steel | 1/2"

Plastic | 1/2"

Technical Data

Function	2 Way NC, NO
Ports size	1/4", 3/8", 1/2" *, 3/4", 1" BSP & NPT * Plastic is only available in 1/2"
Pressure range	See table *Minimum pressure differential of 0.3 or 0.5 is required
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) * * For Plastic : 5°C to 50°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Manual override:** NC/NO - Brass screw * *Manual Override unavailable in Plastic **Main Valve:** Brass, Stainless Steel AISI 316, Plastic (Reinforced Nylon **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• Slow closing system to prevent water hammer effect

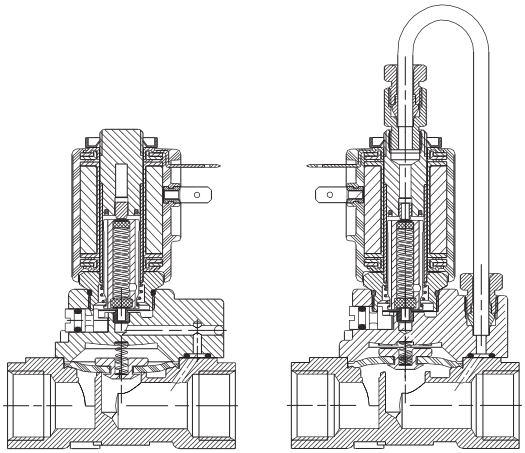
Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•		
12	•			•			•		
24	•	•*		•			•		
48	•			•			•		
110	•			•			•		
120	•			•	•*				
220	•	•*		•			•		
230	•			•	•*				
240	•			•			•		

• Available options

* Only for NC

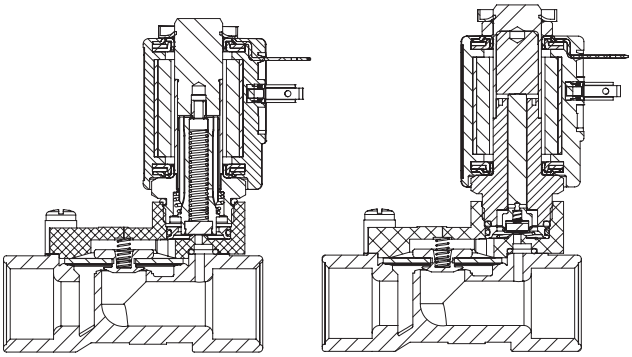
GEM-SOL® | **S32** (GEM-S) | 1/4"-1" | 2 Way NC, NO



NC NO

Flow direction

PLASTIC



NC NO

Flow direction

Pressure (bar) & Flow NO/NC
GEM-S-☐-20....41

Size	Orifice (mm)	Pressure (bar)		Kv (l/min)
		AC, DC	ADC	
1/4"	8	0.5 to 20	0.5 to 15	12
3/8"	8			16
1/2"	12			35

Pressure (bar) & Flow NO/NC
GEM-S-☐-40 & 41 | Plastic

Size	Orifice (mm)	Pressure (bar)	Kv (l/min)
		AC, DC	
1/2"	12	0.5 to 12	35

Pressure (bar) & Flow NO/NC
GEM-S-☐-☐r

Size	Orifice (mm)	Pressure (bar)		Kv (l/min)
		AC, DC	ADC	
1/2"	16	0.5 to 20	0.5 to 15	60

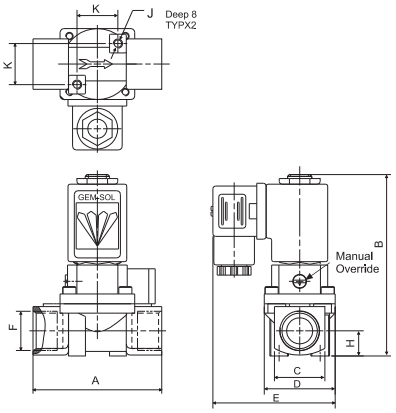
Pressure (bar) & Flow NO/NC
GEM-S-☐-50....60

Size	Orifice (mm)	Pressure range (bar) AC, DC & ADC	Kv (l/min)
3/4"	20	0.3 to 15	130
1"	25	0.5 to 15	200

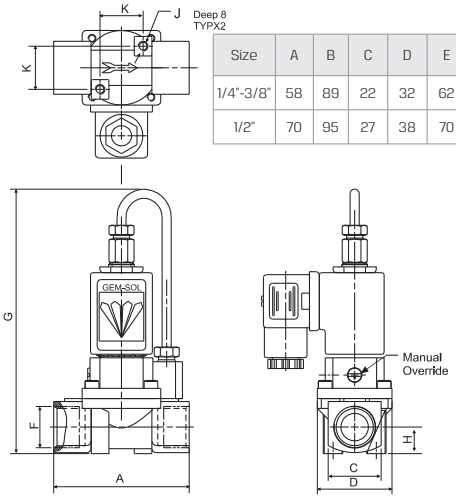
* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | S32 (GEM-S) | 1/4"-1" | 2 Way NC, NO

Dimensions

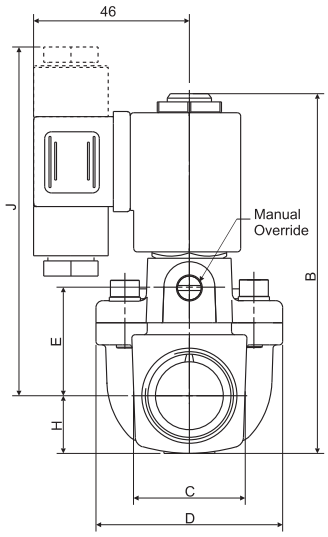


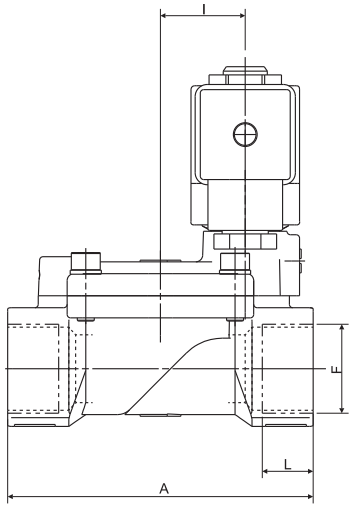
NC



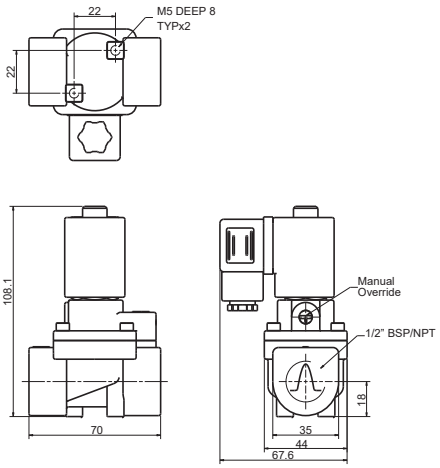
NO

Size	A	B	C	D	E	F	G	H	J	K	Weight with coil
1/4"-3/8"	58	89	22	32	62	1/4"-3/8" BSP/NPT	125	11	M5x0.8	22	466gr
1/2"	70	95	27	38	70	1/2" BSP/NPT	135	13.5	M5x0.8	22	562gr



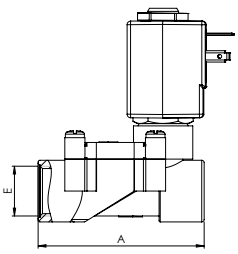


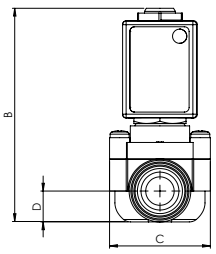
Size	A	B	C	D	E	H	L	I	J
3/4" BSP/NPT	90	106	32	55	32	17	15	25	103
1"BSP/NPT	100	112.5	38.5	65	34	21	16	29.5	109.50

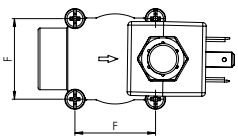


GEM -□r 16mm orifice
NC

Plastic 1/2"







Function	A	B	C	D	E	F
NC	70	90	42.5	13	1/2"	34
NO	70	93.4	42.5	13	1/2"	34

GEM-SOL® | S32 (GEM-S) | 1/4"-1" | 2 Way NC, NO

How to Order

GEM-S	-	BODY		PORT		FUNCTION		SEALS		MANUAL OVERRIDE		-	VOLTAGE		POWER		CONNECTOR	
		Brass	2	1/4" BSP	20	2W NC	1	NBR	N	**None ***	**0**		without coil	0	No coil	0	with	1
		Stainless Steel	3	1/4" NPT	21	2W NO [2]	2	**FKM * [3]**	**V**	Slot	2		6	1	AC8W 50Hz	1	with LED	2
		Plastic [1] *	**4**	3/8" BSP	30			EPDM	E	**Knob ***	**3**		12	2	AC8W 60Hz	2	**flying leads coil ***	**4**
				3/8" NPT	31								24	3	DC10W	3	with 1/2" Hub	5
				1/2" BSP	40								48	4	AC5.5W 50Hz [5]	4	**surge protection with LED ***	**6**
				1/2" NPT	41								110	5	AC5.5W 60Hz [5]	5	connector with moulded cable	7
				3/4" BSP	50								120	6			other	9
				3/4" NPT	51								220	7A				
				1" BSP	60								230	7				
				1" NPT	61								240	8				
													Latch/other * [4]	**9**				

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-S-2202N2-321**

GEM-SOL® S32 (GEM-S) pilot operated, Brass, 1/4" BSP, 2W NO, NBR seals, slot manual override, 24V AC8W 60Hz with connector

(1) Plastic is only available in 1/2"
(2) Option available in 1/4" - 1/2"
(3) For 3/4" and 1"
(4) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table
(5) Only for NC
* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied. For Plastic, please define either DC or AC.

How to Order

GEM-S	-	BODY		PORT		FUNCTION		SEALS		MANUAL OVERRIDE		-	VOLTAGE		POWER		CONNECTOR	
		Brass	2	**1/2" BSP ***	**40r**	2W NC	1	NBR	N	**None ***	**0**		without coil	0	No coil	0	with	1
				1/2" NPT *	**41r**	2W NO	2	FKM	V	Slot	2		6	1	AC8W 50Hz	1	with LED	2
								EPDM	E	**Knob***	**3**		12	2	AC8W 60Hz	2	**flying leads coil ***	**4**
													24	3	DC10W	3	with 1/2" Hub	5
													48	4	AC5.5W 50Hz [2]	4	**surge protection with LED ***	**6**
													110	5	AC5.5W 60Hz [2]	5	connector with moulded cable	7
													120	6			other	9
													220	7A				
													230	7				
													240	8				
													Latch/other * [1]	**9**				

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-S-240r1V2-321** (16mm orifice size)

GEM-SOL® S32 (GEM-S) pilot operated, Brass, 1/2" BSP, 2W NC, NBR seals, slot manual override, 24V AC8W 60Hz with connector

(1) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table
(2) Only for NC
* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied.

***** To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | S32 (GEM-S)

1/4", 1/2" | 3 Way NC, NO

Technical Data

Function	3 Way NC, NO
Ports size	1/4", 1/2" BSP & NPT
Pressure range	See table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Manual override:** NC : Push in lock hydraulic bypass NO : Brass screw or finger knob **Main Valve:** Brass **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM
Media	Air, water, light oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

Brass | 1/4" |
Push lock manual override

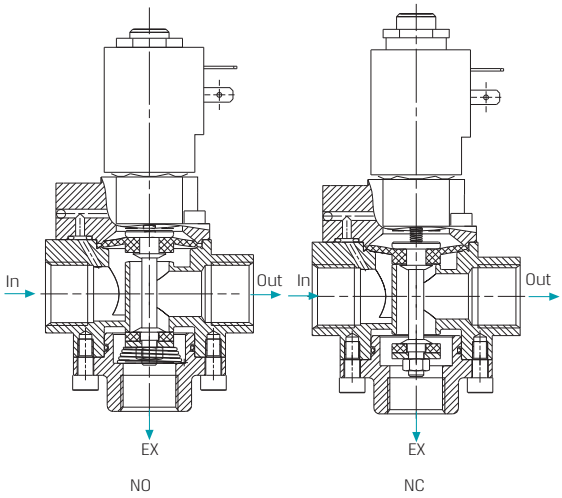
Pressure (bar) & Flow

Size	Orifice (mm)	Pressure (bar)	Kv(l/min)
1/4"	8	0.8 to 12	18
1/2"	12		50

Voltage & Power Consumption

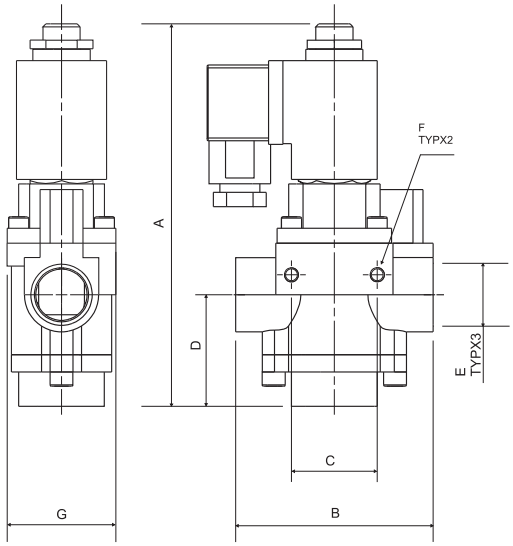
	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•		
12	•			•			•		
24	•			•			•		
48	•			•			•		
110	•			•			•		
120	•			•					
220	•			•			•		
230	•			•					
240	•			•			•		

• Available options



GEM-SOL®| S32 (GEM-S) | 1/4", 1/2" | 3 Way NC, NO

Dimensions



Size	A	B	C	D	E	F	G	Weight with coil
1/4"	124.5	58	25	32.5	1/4"	M4x0.7 Deep 6	32	540gr.
1/2"	134	69	30	32.5	1/2"	M5x0.8 Deep 7	38	758gr.

How to Order

GEM-S	-	BODY	PORT	FUNCTION	SEALS	MANUAL OVERRIDE	-	VOLTAGE	POWER	CONNECTOR
		Brass 2	1/4" BSP 20	3W NC 3	NBR N	Slot (1) 2		without coil 0	No coil 0	with 1
			1/4" NPT 21	3W NO 4	FKM V	Push lock (2) 5		6 1	AC8W 50Hz 1	with LED 2
			1/2" BSP * 40		**EPDM * E**			12 2	AC8W 60Hz 2	**flying leads coil * 4**
			1/2" NPT * 41					24 3	DC10W 3	with 1/2" Hub 5
								48 4		**surge protection with LED * 6**
								110 5		connector with moulded cable 7
								120 6		other 9
								220 7A		
								230 7		
								240 8		
								Latch/other * (3) 9		

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-S-2204V2-331**

GEM-SOL® S32 (GEM-S) pilot operated, Brass, 1/4" BSP, 3W NO, FKM,
slot manual override, 24VDC 10W with connector.

(1) For NO only
(2) For NC only
(3) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table

* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied.

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | Z32 (GEM-Z)

Zero Differential Pressure 1/4"-3/4" | 2 Way NC, NO

Technical Data

Function	2 Way NC, NO
Ports size	1/4", 1/2", 3/4" BSP & NPT
Pressure range	See table * For plastic body, maximum working pressure is 4 bar
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Brass, Stainless Steel AISI 316, Plastic (Reinforced Nylon)* * Plastic (Reinforced Nylon): only available in 1/2" **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• When switching from an AC to a DC coil, the solenoid operator must be changed as well.
• Can be used in vacuum application from -1 bar to maximum pressure - see tables.

Brass | 1/2" | NC

Plastic | 1/2" | NC

Stainless Steel | 1/2" | NC

Pressure (bar) & Flow NC

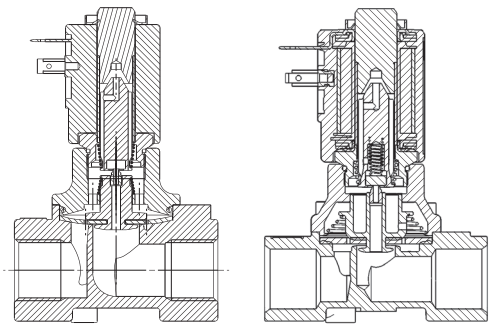
Size	Orifice (mm)	Pressure (bar)		Kv (l/min)
		AC	DC	
1/4"	8	0 to 14	0 to 7	12
1/2"	12	0 to 14	0 to 8	18

Pressure (bar) & Flow NC (GEM-Z-☐☐r)

Size	Orifice (mm)	Pressure (bar)		Kv (l/min)
		AC	DC	
1/2"	16	0 to 10	0 to 6	60
3/4"	16	0 to 10	0 to 6	80

Pressure (bar) & Flow NO

Size	Orifice (mm)	Pressure (bar)		Kv (l/min)
		AC	DC	
1/4"	8	0 to 8	0 to 8	12
1/2"	12	0 to 8	0 to 8	20


GEM-Z☐r

→ Flow direction

Voltage & Power Consumption

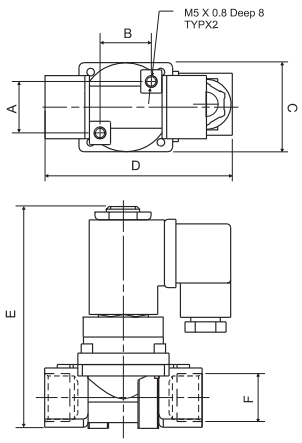
	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•		
12	•			•			•		
24	•			•			•		
48	•			•			•		
110	•			•			•		
120	•			•					
220	•			•			•		
230	•			•					
240	•			•			•		

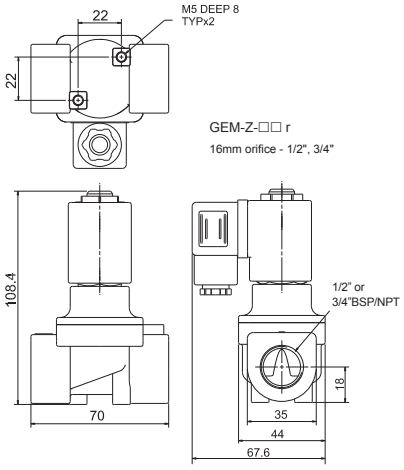
• Available options

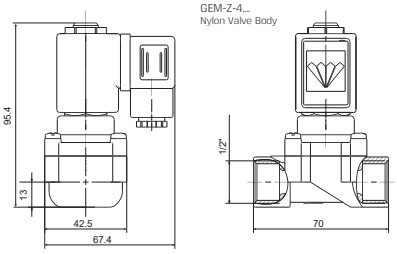
GEM-SOL®| Z32 (GEM-Z) | Zero Differential Pressure 1/4"-3/4" | 2 Way NC, NO

Dimensions

Size	A	B	C	D	E	F	Weight with coil
1/4"	22	22	32	58	89	1/4" BSP/NPT	415gr.
1/2"	22	22	38	70	95	1/2" BSP/NPT	530gr.







How to Order

*** When ordering without coil, please define what current and pressure rating is needed (DC, AC)**

GEM-Z	-	BODY		PORT		FUNCTION		SEALS		-	VOLTAGE		POWER		CONNECTOR	
		Brass	2	1/4" BSP	20	2W NC	1	NBR	N		W/out coil	0	No coil	0	with	1
		Stainless Steel	3	1/4" NPT	21	**2W NO*** (5)	**2a**	FKM	V		6	1	AC8W 50Hz	1	with LED	2
		Plastic (1)	4	1/2"BSP	40			EPDM	E		12	2	AC8W 60Hz	2	**flying leads coil***	**4**
				1/2"NPT	41						24	3	DC10W	3	with 1/2" Hub	5
				1/2"BSP* (2) (3)	**40r**						48	4			**surge protection with LED***	**6**
				1/2"NPT *(2) (3)	**41r**						110	5			connector with moulded cable	7
				3/4"BSP*(3) (4)	**50r**						120	6			other	9
				3/4"NPT*(3) (4)	**51r**						220	7A				
											230	7				
											240	8				
											Latch/ other (6)	**9**				

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-Z-2401N-221**

GEM-SOL® Z32 (GEM-Z) Zero Differential, Brass, 1/2" BSP, 2W NC,
NBR, 12V AC8W 60Hz with connector.

(1) Only available in 1/2"
(2) Not available in Stainless Steel
(3) 16mm orifice
(4) Only for Stainless Steel 16mm orifice
(5) NO function without M/O, not available for GEM-Z-□□r
(6) For specifying Latch type coil, please refer to A3P32 (GEM-A3P) valve - How to Order table

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | SM32 (GEM-SM)

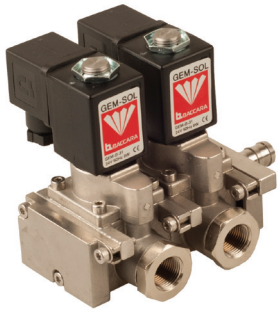
Manifold 1/4", 1/2" | 2 Way NC, NO

Technical Data

Function	2 Way NC, NO
Ports size	1/4", 1/2" BSP & NPT
Pressure range	See table *Minimum pressure differential of 0.3 or 0.5 is required
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Manual override:** NC/NO - Brass screw **Main Valve:** Brass Stainless Steel AISI 316 **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM
Assembly	• Stations attached by 3 screws • End stations are either with ports or plugged
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

- When using a manifold with more than 8 stations, it is advisable to use two air supplies, one at each end
- It is possible to combine functions on one manifold
- Slow closing system to prevent water hammer effect
- Pressure separation plug between stations is available.

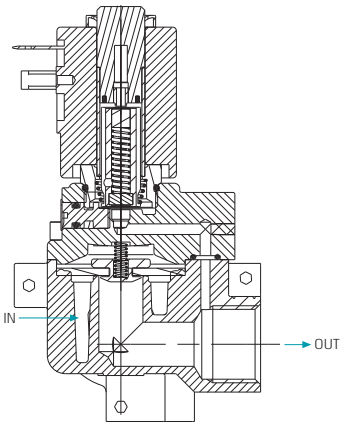
4 Station Manifold | Brass



2 Station Manifold | Stainless Steel

Pressure (bar) & Flow

Size	Orifice (mm)	Pressure (bar)	Kv(l/min)
1/4"	8	0.5 to 20	12
1/2"	12		35



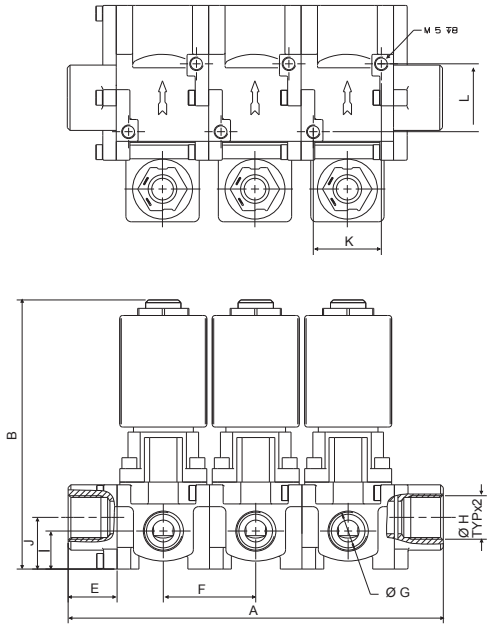
Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•		
12	•			•			•		
24	•			•			•		
48	•			•			•		
110	•			•			•		
120	•			•					
220	•			•			•		
230	•			•					
240	•			•			•		

- Available options

GEM-SOL® | **SM32** (GEM-SM) | 1/4", 1/2" | 2 Way NC, NO

Dimensions



Size	A	B	C	D	E	F	G	H	I	J	K	L
1/4"	36+34xN*	99	57	80	18	34	1/4" BSP/NPT	3/8" BSP/NPT	14	19	25	25
1/2"	40+40xN*	112.8	67	83.9	20	40	1/2" BSP/NPT	1/2" BSP/NPT	21	26	32	32

*N - Number of stations

How to Order

GEM-SM	-	No. of STATIONS	BODY	PORT	FUNCTION	SEALS	MANUAL OVERRIDE	-	VOLTAGE	POWER	CONNECTOR
		specify quantity	Brass 2	1/4" BSP (1) 20	2W NC 1	NBR N	**None * 0**		without coil 0	No coil 0	with 1
			Stainless Steel * 3	1/4" NPT (1) 21	2W NO 2	FKM V	Slot 2		6 1	AC8W 50Hz 1	with LED 2
				1/2" BSP * 40		EPDM E	**Knob * 3**		12 2	AC8W 60Hz 2	**flying leads coil * 4**
				1/2" NPT * 41					24 3	DC10W 3	with 1/2" Hub 5
									48 4		**surge protection with LED * 6**
									110 5		connector with moulded cable 7
									120 6		other 9
									220 7A		
									230 7		
									240 8		
									Latch/other (2) 9		

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-SM-022202V2-321**

GEM-SOL® SM32 (GEM-SM) pilot operated, 2 stations, Brass, 1/4" BSP, 2W NO, FKM, slot manual override, 24VAC 8W 60Hz with connector.

(1) Only available in Brass
(2) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table

* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied.

* To order manifolds manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | SE32 (GEM-SE) Special

General Purpose 1/4"-1/2" | 3 Way

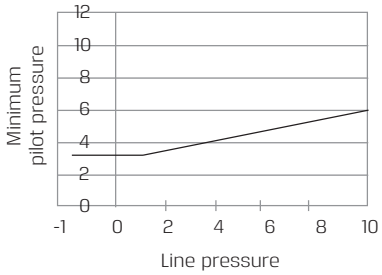
Technical Data

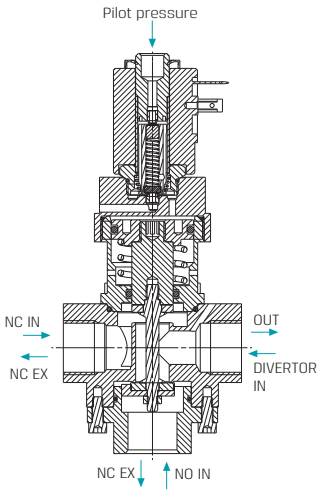
Function	3 Way General purpose
Ports size	1/4", 3/8", 1/2" BSP & NPT
Pressure range	• See table * Min. pilot presssure : 1.5 bar (for other, see graph)
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Brass **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM | Piston seal PU* * other seals available upon request
Media	Air, water, oil
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

Brass | 1/4"

Pressure (bar) & Flow

Size	Orifice(mm)	Pressure (bar)	Kv(l/min)
1/4"	8	0 to 10	12
3/8"	12		16
1/2"	12		35





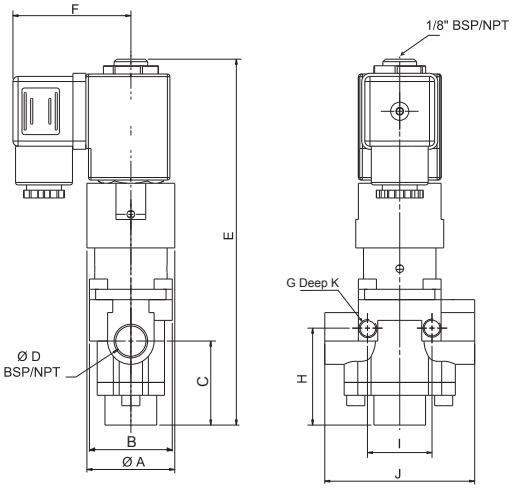
Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•	•	
12	•			•			•	•	
24	•	•		•	•		•		
48	•			•			•		
110	•			•	•		•		
120	•			•					
220	•	•		•			•		
230	•	•		•	•		•		
240	•			•			•		

• Available options

Dimensions

Size	A	B	C	D	E	F	G	H	I	J	K
1/4"	34	32	32.5	1/4"	141.5	45.6	M4	37.5	25	58	6
3/8" 1/2"	45	38	41	3/8" 1/2"	155	45.6	M5	47	30	69	7



BACCARA®
AUTOMATION & CONTROL

SOLENOID VALVES

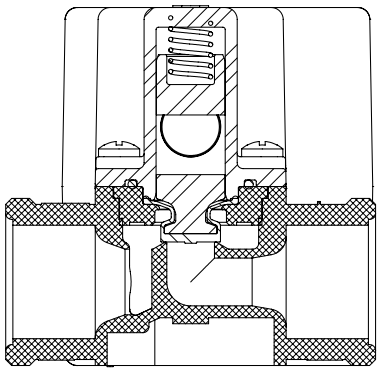
GEM-SOL® | SPECIAL PURPOSE

GEM-SOL® | CPR (GEM-CPR) Special

Precise Isolated Proportional 2 Way NC

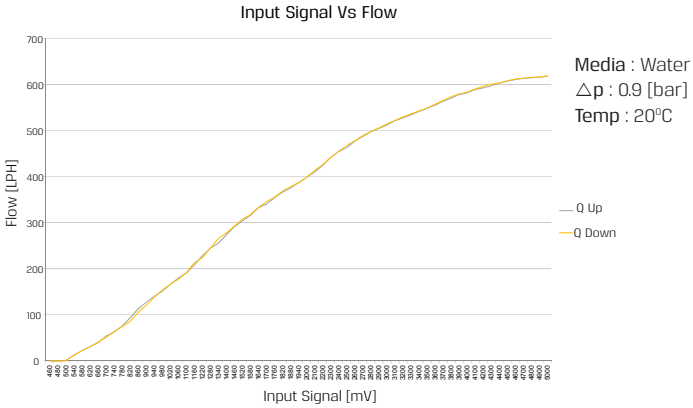
Technical Data

Function	2 Way NC (with back-up battery)
Ports size	1/2" BSP & NPT
Orifice size	8mm (Up to 600 l/hour)
Pressure range	• Vacuum applications : (-1) - 0 Bar • Pressure applications : 0 - (+1) Bar *For other pressures, please consult our technical sales department
Temperature range	Fluid : -10° to 45°C (no freezing) Ambient : -10°C to 45°C
Materials	**In contact with media :** Valve body : • Standard : PVC (UV Protection) • Optional : According to customer demand or application (e.g Stainless steel) Diaphragm & seals : FKM, EPDM **Not in contact with media :** Operator housing : PP (UV protection) Manual override : Acetal (Manual override is standard)
Media	• Liquids & Gases *Please consult our technical sales department for a specific media • Application examples : · Irrigation fertilizing systems · Medical devices
Control signal	0-5V or 4-20mA
Valve stroke resolution	< 0.01mm
Valve stroke accuracy	< ± 0.01 mm
Full stroke duration	0.6 sec, each direction
Current consumption	• Standby Mode (Holding position): 25 [mA] • Active Control Mode: Up to 120 [mA] • Full Open/Close Mode (starting current): Up to 600 [mA]
Supply voltage	12-24 [V] ±5% AC (50 or 60Hz) Or 12-24[V] ±10% DC *For other supply voltages, please consult our technical sales department *Current and voltage spikes protections might be required. Please consult our technical sales department
Connection	5 wires cable (3m length) : • Black & red : Supply voltage (polarity is not restricted) • Green : 0-5 V analog control signal • Blue : 4-20 mA analog control signal • Yellow : Analog control signal common
Recommended control signal resolution	Voltage : 20 mV | Current : 0.064 mA
Standard / Certification	**CE** • EMC : EN55011 Group 1 - Class A | EN61000-6-1 CFR 47 FCC Class A • SAFETY : IEC/EN61010-1
Standard protection class	IP67



Flow direction

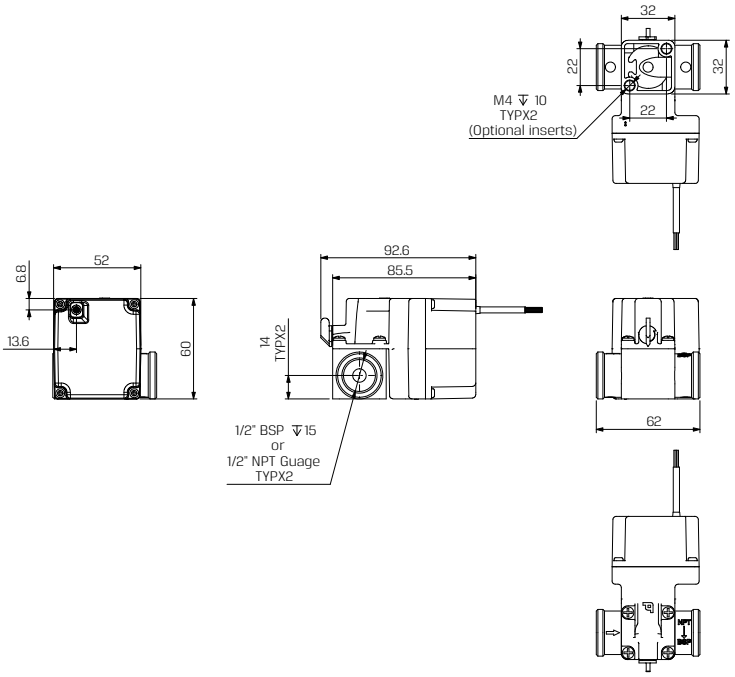
Typical performance graph



Media : Water
△p : 0.9 [bar]
Temp : 20°C

GEM-SOL®| CPR (GEM-CPR) | Precise Isolated Proportional 2 Way NC

Dimensions



How to Order

GEM-CPR	-	PORT		FUNCTION		PRESSURE		SEALS		MANUAL OVERRIDE		-	CONTROL SIGNAL		VOLTAGE	
		1/2" BSP	40	2W NC	1	Vacuum	1	FKM	V	Plastic	1		0-5 V	1	12-24 VDC	1
		1/2" NPT	41			Pressure (1)	2	EPDM	E				4.20 mA	2	12-24 VAC	2

Example : **GEM-CPR-4011E1-11**

GEM-SOL® CPR (GEM-CPR) Proportional, 1/2" BSP, 2W NC, Vacuum, EPDM seals, plastic manual override, 0-5V control signal, 12-24 VDC

(1) Maximum inlet pressure : 1 bar

*Please specify the working pressure range when placing an order

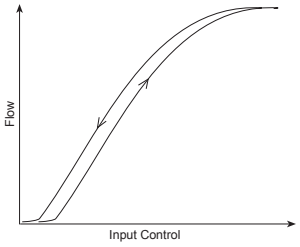
* To order valves manufactured according to your specific requirements, please contact our technical sales department.

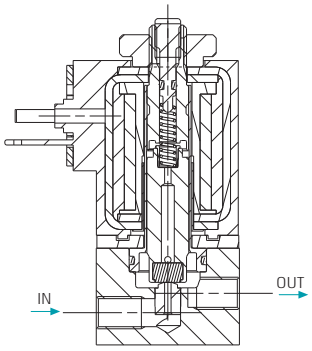
GEM-SOL® | PR16 (G65-PR) Special
Proportional 2 Way NC

Technical Data

Function	2 Way NC
Ports size	M5, #10UNF, 1/8" BSP & NPT
Orifice size	See table
Pressure range	Vacuum - see table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 55°C
Materials in contact with media	**Main Valve:** Aluminium, Brass, Stainless Steel AISI 316 **Solenoid Operator:** Stainless Steel AISI 300 & 400 series, Brass **Seals:** NBR, FKM, EPDM (other seals on request) **Guide rings:** PTFE
Media	Air, water, oil
The control parameter is the current in the coil! Operating current	Max. 1500[mA] standard voltage 24V DC(=)
Electrical connection	Per DIN 43650-b, or 2 flying leads 18AWG (0.75mm²) 300 mm length
Standard protection class	IP65 with connector

• Media : Max. viscosity 21mm²/s





Guidelines for selection :

1. The pressure drop (△P) on the valve should be 30-50% or higher, of the total pressure drop in the system.
2. Special consideration should be taken in choosing the right Kv of the valve as this factor determines the flow and pressure drop of the valve.
3. To achieve better regulation performance when working without a control unit, the maximum pressure should be 1.2 times the working pressure. The maximum pressure can be adjusted using the upper screw.
4. Inlet pressure should be kept constant during operation.

Standard calibration pressure (bar)

	Orifice size (mm)			
	0.8	1.0	1.2	1.6
Pressure rating [bar] (1)	10	8	6	4
Flow factor Kv(l/min)	0.4	0.5	0.65	1.2

(1) From technical vacuum to max. rating
(2) Other calibration pressures on request

Flow regulation :
With control unit PWM 500[Hz] measured at constant △P (delta P)

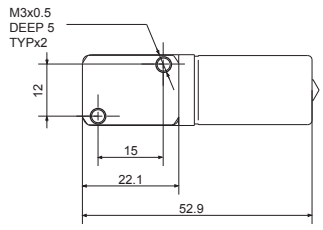
Hysteresis	<5% of F.S
Repeatability	<3% of F.S
Sensitivity	<2% of F.S

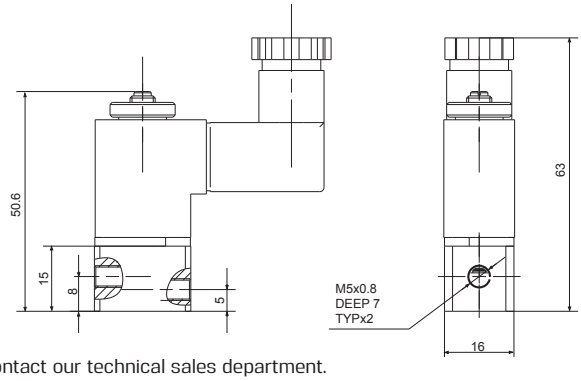
Voltage & Power Consumption

	AC 50Hz		DC (W)
V	3.2VA	3.6VA	3
12			•
24			•
110			
230			

• Available options

Dimensions





* To order valves manufactured according to your specific requirements, please contact our technical sales department.

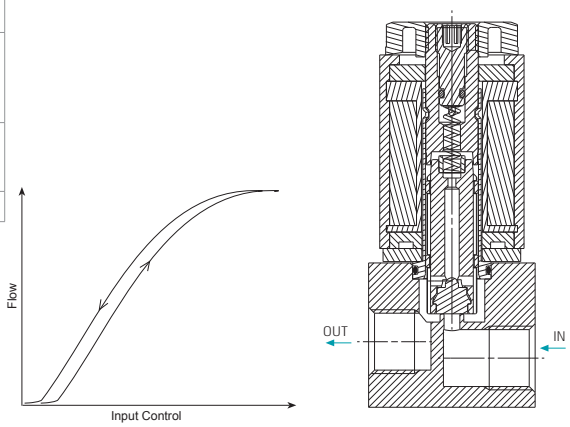
GEM-SOL® | PR22 (G80-PR) Special

Proportional 2 Way NC

Technical Data

Function	2 Way NC
Ports size	M5, 1/8" BSP & NPT
Orifice size	See table
Pressure range	Vacuum - see table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 55°C
Materials in contact with media	**Main Valve:** Aluminium, Brass, Stainless Steel AISI 316 **Solenoid Operator:** Stainless Steel AISI 300 & 400 series, Brass **Seals:** NBR, FKM, EPDM, FFKM (other, on request) **Guide rings:** PTFE
Media	Neutral gases, water, oil Max. viscosity 21mm²/s
The control parameter is the current in the coil! Operating current	 100-500[mA] standard voltage 24V DC(=)
Electrical connection	Per DIN 43650-b, or 2 flying leads 18AWG (0.75mm²) 300 mm length
Standard protection class	IP65 with connector

Stainless Steel | 1/8"



Guidelines for selection

1. The pressure drop (△P) on the valve should be 30-50% or higher, of the total pressure drop in the system.
2. Special consideration should be taken in choosing the right Kv of the valve as this factor determines the flow and pressure drop of the valve.
3. To achieve better regulation performance when working without a control unit, the maximum pressure should be 1.2 times the working pressure. The maximum pressure can be adjusted using the upper screw.
4. Inlet pressure should be kept constant during operation.

Standard calibration pressure (bar)

	Orifice size (mm)				
	1.0	1.2	1.6	2.0	2.4
Pressure rating (bar)(1)	10	8	6	5	4
Flow factor Kv(l/min)	0.5	0.65	1.0	1.6	2.0

(1) From technical vacuum to max. rating
(2) Other calibration pressures on request

Flow regulation :

With control unit PWM 500[Hz] measured at constant △P (delta P)

Hysteresis	<5% of F.S
Repeatability	<3% of F.S
Sensitivity	<2% of F.S

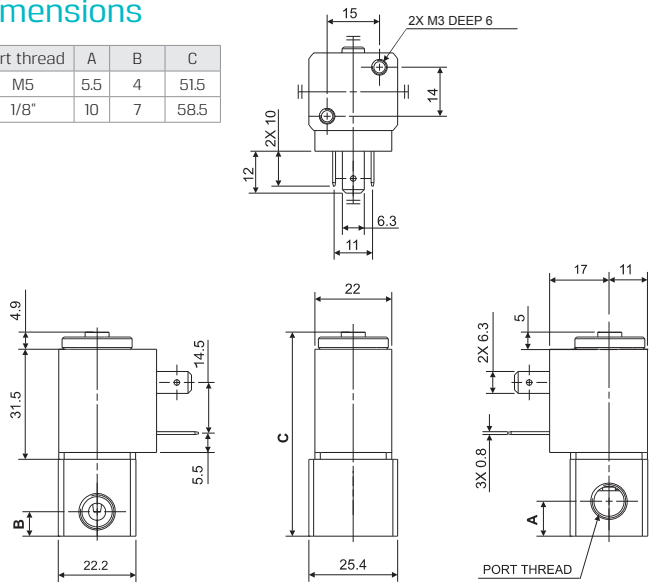
Voltage & Power Consumption

DC (W)		
V	6	3
6	•	•
12	•	•
24	•	•
110		
230		

• Available options

Dimensions

Port thread	A	B	C
M5	5.5	4	51.5
1/8"	10	7	58.5



* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | PR32 (GEM-PR)
Proportional 2 Way NC

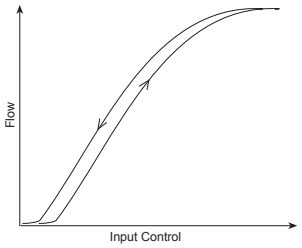
Technical Data

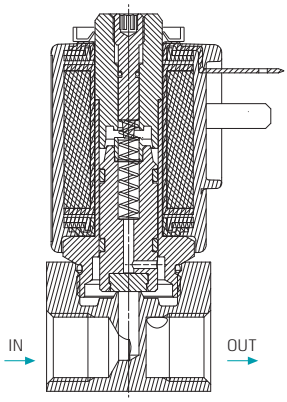
Function	2 Way NC
Ports size	1/8", 1/4" BSP & NPT
Orifice size	See table
Pressure range	See table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 55°C
Materials in contact with media	**Main Valve:** Brass, Stainless Steel AISI 316 **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM, Polyurethane, PTFE **Guide rings:** PTFE
Media	Neutral gases, water, oil Max. viscosity 21mm²/s
The control parameter is the current in the coil. Operating current	 100-500[mA] standard voltage 24V DC(=)
Electrical connection	Per DIN 43650-a, or 2 flying leads 18AWG (0.75mm²) 300 mm length
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

Stainless Steel

Guidelines for selection

1. The pressure drop (△P) on the valve should be 30-50% or higher, of the total pressure drop in the system.
2. Special consideration should be taken in choosing the right Kv of the valve as this factor determines the flow and pressure drop of the valve.
3. To achieve better regulation performance when working without a control unit, the maximum pressure should be 1.1 times the working pressure. The maximum pressure can be adjusted using the upper screw.
4. Inlet pressure should be kept constant during operation.





Standard calibration pressure (bar)

	Orifice size (mm)						
	0.8	1.2	1.6	2.0	2.4	3.0	4.0
Pressure rating(bar) (1)	16	12	10	8	6	3.5	2
Flow factor Kv(l/min)	0.6	1.1	1.7	2.5	3.5	4.5	5

(1) From technical vacuum to max. rating
(2) Other calibration pressures on request

Flow regulation :
With control unit PWM 500[Hz] measured at constant △P (delta P).

Hysteresis	<5% of F.S
Repeatability	<3% of F.S
Sensitivity	<2% of F.S

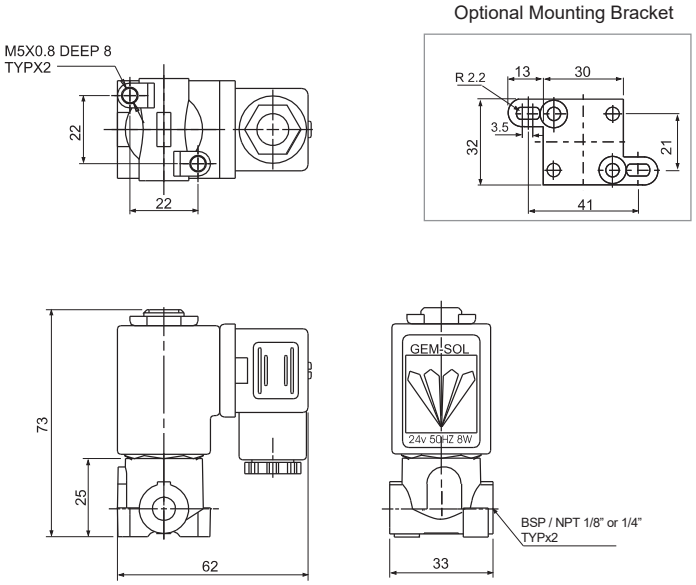
Voltage & Power Consumption

	DC (W)		
V	10	5.5	3.5
6			
12	•		
24	•		
48			
110			
120			
220			
230			
240			

• Available options

GEM-SOL® | **PR32** (GEM-PR) | Proportional 2 Way NC

Dimensions



How to Order

GEM-PR	-	BODY		PORT		FUNCTION		ORIFICE		SEALS		MANUAL OVERRIDE		-	CONNECTOR	
		Brass	2	1/8" BSP	10	2W NC	1	0.8	1	NBR	N	None	0		with	1
		Stainless Steel	3	1/8" NPT	11			1.2	2	FKM	V				**flying leads coil ***	**4**
				1/4" BSP	20			1.6	3	EPDM	E				with 1/2" Hub	5
				1/4" NPT	21			2.0	4	**Polyurethane ***	**P**				connector with moulded cable	7
								2.4	5	**PTFE ***	**T**					
								3.0	6							
								4.0	7							

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-PR-21015N0-1**

GEM-SOL® PR32 (GEM-PR) Proportional, Brass, 1/8" BSP, 2W NC, 2.4 orifice, NBR, without manual override, with connector.

* Please specify the working pressure range when placing an order

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | HP32 (GEM-HP)

High Pressure 1/4"-1" | 2 Way NC, NO

Technical Data

Function	2 Way NC, NO
Ports size	1/4", 1/2", 3/4", 1" BSP & NPT
Pressure range	See table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Brass, Stainless Steel AISI 316 **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** Polyurethane, FKM*, EPDM*, PTFE * The orifice seal is PTFE
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

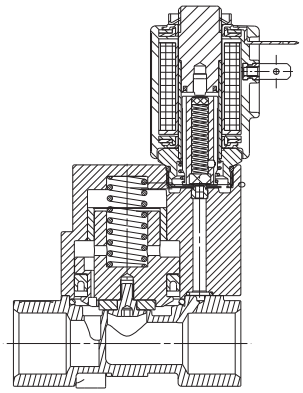
• Latch valves are available upon request

Brass | 1/2"

Stainless Steel | 1/2"

Pressure (bar) & Flow NC

Size	Orifice (mm)	Pressure (bar)	Kv(l/min)
1/4"	8	1 to 60	12
1/2"	12		35
3/4"	20		130
1"	25		200



Flow direction →

Pressure (bar) & Flow NO

Size	Orifice (mm)	Pressure (bar)	Kv(l/min)
1/4"	8	1 to 30	12
1/2"	12		35
3/4"	20		130
1"	25		200

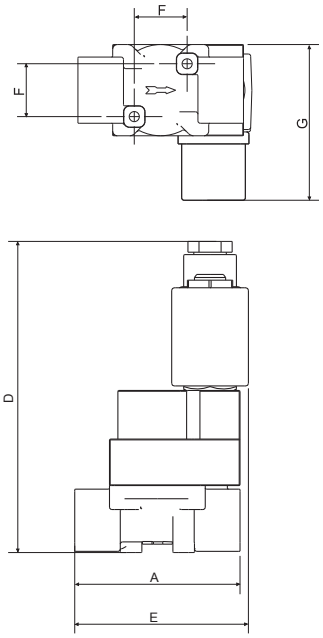
Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•		
12	•			•			•		
24	•			•			•		
48	•			•			•		
110	•			•			•		
120	•			•					
220	•			•			•		
230	•			•					
240	•			•			•		

• Available options

GEM-SOL® | **HP32** (GEM-HP) | High Pressure 1/4"-1" | 2 Way NC, NO

Dimensions



Size	A	B	C	D	E	F	G
1/4"	58	32	10.5	118	91.5	22	58.9
1/2"	69	38	13	130	102.5	22	64.9
3/4"	90	55	17	140	-	-	73.1
1"	100	65	21	151	-	-	78.1

How to Order

*** When ordering without coil, please define what current and pressure rating is needed (DC, AC)**

GEM-HP	-	BODY		PORT		FUNCTION		SEALS		-	VOLTAGE		POWER		CONNECTOR	
		Brass	2	1/4" BSP	20	2W NC	1	Polyurethane	P		without coil	0	No coil	0	with	1
		Stainless Steel *	**3**	1/4" NPT	21	**2W NO through base ***	**2a**	FKM [1]	V		6	1	AC8W 50Hz	1	with LED	2
				1/2" BSP *	**40**			EPDM [1]	E		12	2	AC8W 60Hz	2	**flying leads coil ***	**4**
				1/2" NPT *	**41**			**PTFE ***	**T**		24	3	DC10W	3	with 1/2" Hub	5
				3/4" BSP	50						48	4			**surge protection with LED ***	**6**
				3/4" NPT	51						110	5			connector with moulded cable	7
				1" BSP *	**60**						120	6			other	9
				1" NPT *	**61**						220	7A				
											230	7				
											240	8				
											Latch/other * [2]	9				

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-HP-2201P-321**

GEM-SOL® HP32 (GEM-HP) High Pressure, Brass, 1/4" BSP, 2W NC,
Polyurethane seals, 24VAC 8W 60Hz with connector.

(1) The orifice seal is PTFE

(2) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

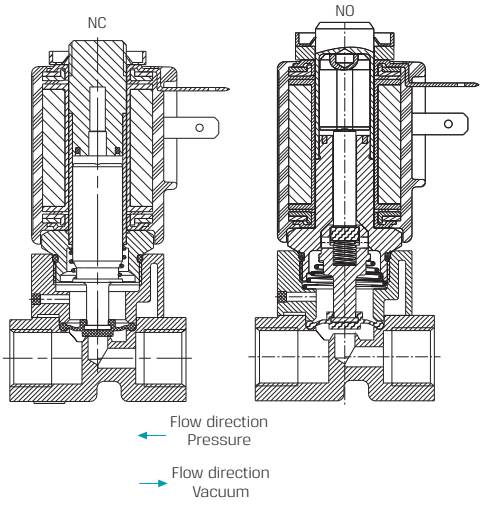
GEM-SOL® | C32 (GEM-C)

Chem-Sol 1/4" | 2 Way NC, NO

Technical Data

Function	2 Way NC, NO
Ports size	1/4" BSP & NPT
Orifice size	4.5mm *Option for 2.8 mm orifice. Please contact our technical sales department
Pressure range	See table
Kv (l/min)	5 l/min
Temperature range	**Fluid :** 5º to 50ºC (no freezing) **Ambient :** -10ºC to 50ºC
Materials in contact with media	**Manual override:** NC : Plastic (Reinforced Nylon) NO : Manual override is not available **Main Valve:** Reinforced PPA **Seals:** FKM, EPDM, Silicone, Viton™ Extreme™ ETP-600S
Applications	• Chemical process • Water treatment • Analysis device etc
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

2 Way NC | Vacuum



Pressure (bar) NC

Coil Current/Power	Flow direction not restricted	Flow direction restricted
ADC *	0 to 2.5 bar	0 to 0.6 bar
AC 8W	0 to 2.5 bar	0 to 0.7 bar
AC 5.5W	0 to 2 bar	0 to 0.5 bar
DC 5.5W	0 to 1.5 bar	0 to 0.4 bar

Vacuum (bar) NC

Coil Current/Power	Flow direction not restricted	minimum △p
ADC *	-1 to 0 bar	1 bar
AC 5.5W	-1 to 0 bar	
DC 5.5W	-1 to 0 bar	

Pressure (bar) NO

Coil Current / Power	Flow direction not restricted	Flow direction restricted (1)
ADC *, AC 8W or DC10W	0 to 1 bar	0 to 0.5 bar
5.5W AC/DC	0 to 1 bar	0 to 0.5 bar

(1) Higher input pressure of up to 1atm can be achieved with minimal pressure drop on the valve of 0.3atm

* ADC valves are only suitable for use with AC8W or DC10W coils.

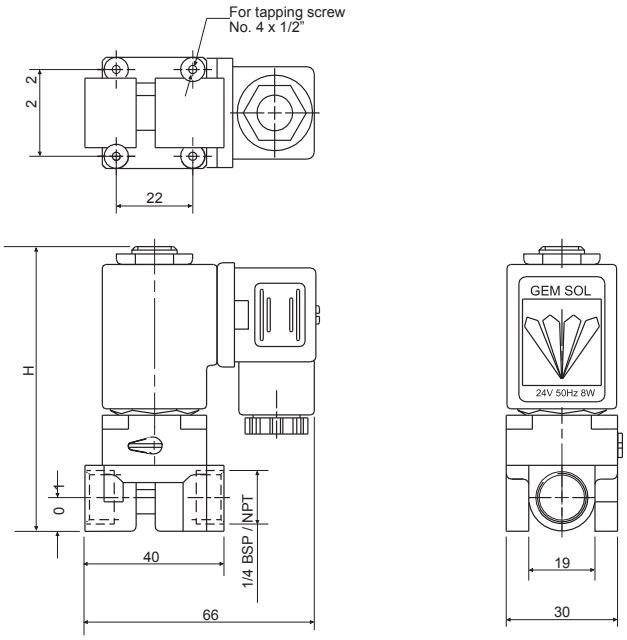
Voltage & Power Consumption NC & NO valves

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•	•	
12	•			•			•	•	
24	•	•		•	•		•	•	
48	•			•			•		
110	•			•	•		•		
120	•			•	•				
220	•	•		•			•		
230	•	•		•	•				
240	•			•			•		

• Available options

GEM-SOL® | **C32** (GEM-C) | Chem-Sol 1/4" | 2 Way NC, NO

Dimensions



Notes

Type	Valve Description	H
NC	GEM-C-12 ☐1....	81
NO	GEM-C-12 ☐2....	84.5

How to Order

GEM-C	-	BODY	PORT	FUNCTION	PRESSURE	SEALS	MANUAL OVERRIDE (1)	-	VOLTAGE	POWER	CONNECTOR
		Plastic 1	1/4" BSP 20	2W NC 1	Vacuum 1	FKM V	None 0		without coil 0	No coil 0	with 1
			1/4" NPT 21	2W NO 2	Pressure 2	EPDM E	**Plastic*** 1		6 1	AC8W 50Hz 1	with LED 2
				2W NO * 2a		**Silicone * S**			12 2	AC8W 60Hz 2	**flying leads coil * 4**
						Viton™ Extreme™ ETP-600S* X			24 3	DC 10W 3	with 1/2" Hub 5
									48 4	AC5.5W 50Hz 4	**surge protection with LED * 6**
									110 5	AC5.5W 60Hz 5	connector with moulded cable 7
									120 6	DC 5.5W 7	other 9
									220 7A		
									230 7		
									240 8		
									Latch/ other * (2) 9		

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-C-12012V1-321**

GEM-SOL® C32 (GEM-C) Chem-Sol, Plastic, 1/4" BSP, 2W NC, Pressure, FKM, plastic manual override, 24V AC 8W 60Hz with connector.

(1) 2 Way NO - manual override is not available

(2) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table

* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied.

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | C32 (GEM-C)

Chem-Sol 1/2" | 2 Way NC

Technical Data

Function	2 Way NC
Ports size	1/2" BSP & NPT
Orifice size	8mm
Pressure range	See table
Kv (l/min)	18 l/min
Temperature range	**Fluid :** 5°C to 50°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Manual override:** Plastic (Reinforced Nylon) * Available for vacuum application only **Main Valve:** PVC **Seals:** FKM, EPDM
Applications	• Chemical process • Water treatment • Analysis device etc
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are from -5% to ±10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• Supplied with mounting threads on request, please specify.

1/2" | Vacuum

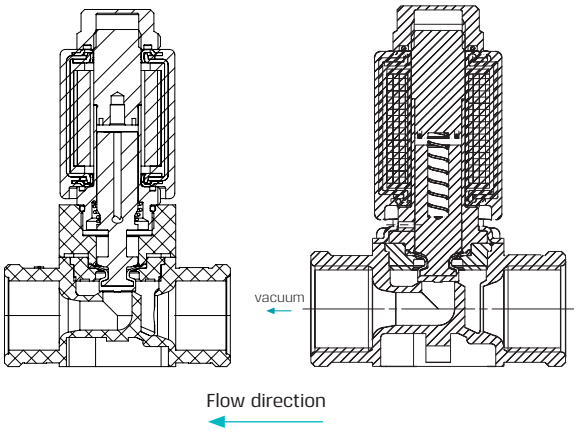
with Manual Override

Pressure (bar) NC

Coil Current/Power	Flow direction not restricted	Flow direction restricted
AC 8W, DC10W	0 to 0.7 bar	Min dp 0.3 bar

Vacuum (bar) NC

Coil Current/Power	Flow direction not restricted	Flow direction restricted
AC 8W	-1 to 0.5 bar	-1 to 0.5 bar
AC 5.5W	-0.5 to 0.5 bar	-0.8 to 0.5 bar
DC 10W	-0.4 to 0.5 bar	-0.6 to 0.5 bar



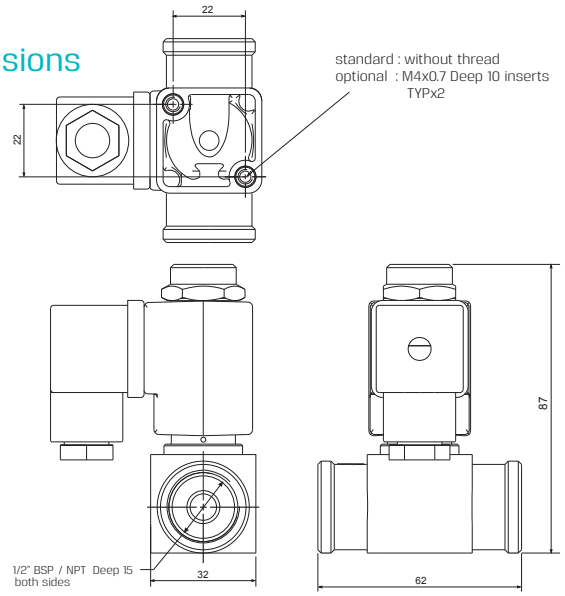
Voltage & Power Consumption

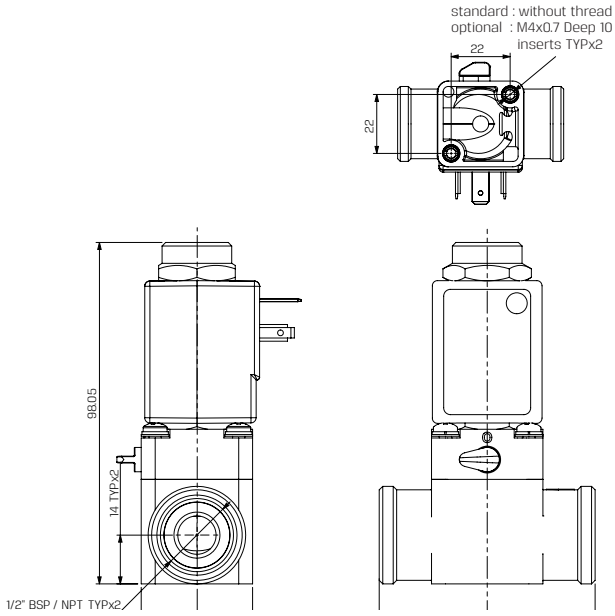
	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							• •		
12	• •			• •			• •		
24	• •	•		• •	•		• •		
48	• •			• •			• •		
110	• •			• •	•		• •		
120	• •			• •	•				
220	• •	•		• •	•		• •		
230	• •	•		• •	• •				
240	• •			• •			• •		

• Available options :
- Vacuum
- Pressure

GEM-SOL®| C32 (GEM-C) | Chem-Sol 1/2" | 2 Way NC

Dimensions





With Manual Override

How to Order

*** When ordering without coil, please define what current and pressure rating is needed (DC, AC)**

GEM-C	-	PORT		FUNCTION		PRESSURE		SEALS		MANUAL OVER-RIDE		-	VOLTAGE		POWER		CONNECTOR	
		1/2" BSP	40	2W NC	1	Vacuum	1	FKM	V	None	Null		W/out coil	0	No coil	0	with	1
		1/2" NPT	41			Pressure	2	EPDM	E	Plastic [1]	1		6	1	AC8W 50Hz	1	with LED	2
													12	2	AC8W 60Hz	2	**flying leads coil***	**4**
													24	3	DC10W	3	with 1/2" Hub	5
													48	4	AC5.5W 50Hz	4	**surge protection with LED***	**6**
													110	5	AC5.5W 60Hz	5	connector with moulded cable	7
													120	6			other	9
													220	7A				
													230	7				
													240	8				
													Latch/ other* [2]	**9**				

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-C-4011V1-321**

GEM-SOL® C32 (GEM-C) Chem-Sol, 1/2" BSP, 2W NC for vacuum, FKM, plastic manual override, 24V AC 8W 60Hz with connector.

(1) Available for Vacuum application only

(2) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | P32 (GEM-P)
Pinch Valve 2 Way NC

Technical Data

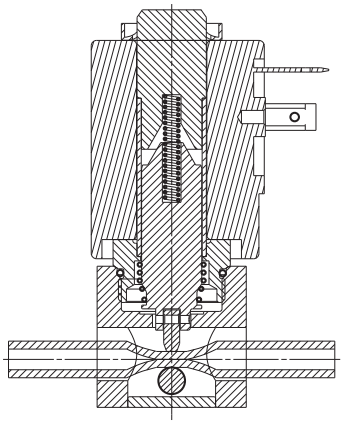
Function	2 Way NC
Tubes	Silicone tubes : 6x4mm, 8x5mm, 9.5x6.5mm
Pressure range	0-1 bar
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials	**Valve:** Aluminium **Solenoid Operator:** Stainless Steel AISI 300 & 400 series
Materials in contact with media	None * fluid flows through silicone tube
Applications	Where corrosive or contaminated fluid must be controlled, such as in : • Laboratories • Industrial and irrigation control • Analysis devices
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal • DC10W • DC 14W - max 70% duty cycle • Ton = 7 [min] max
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• For AC, use rectifier connector.

Voltage & Power Consumption

	DC (W)			
V	14	10	5.5	3.5
6		•		
12		•		
24	•	•		
48		•		
110		•		
120				
220		•		
230				
240		•		

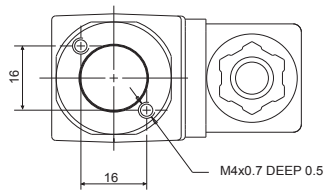
• Available options

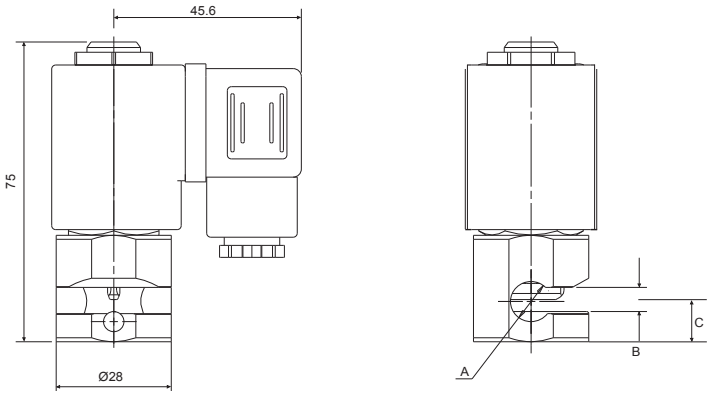


GEM-SOL®| P32 (GEM-P) | Pinch Valve 2 Way NC

Dimensions

	A	B	C
GEM-P - 1☐	6.5	5	10
GEM-P - 2...3☐	9.5	6.5	10





How to Order

GEM-P	-	TUBE		FUNCTION		-	VOLTAGE		POWER (2)		CONNECTOR	
		Ø 6x4	1	2W NC	1		6	1	DC 10W	3	with	1
		Ø 8x5 *	**2**				12	2	DC 14W (3)	8	with LED	2
		Ø 9.5x6.5	3				24	3			**flying leads coil ***	**4**
							48	4			with 1/2" Hub	5
							110	5			**surge protection with LED ***	**6**
							220	7A			connector with moulded cable	7
							240	8			other	9
							Latch * (1)	**9**				

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-P-11-331**

GEM-SOL® P32 (GEM-P) Pinch Valve, Ø 6x4 tube,
2W NC, 24VDC 10W with connector

(1) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table

(2)

GEM-P - 1 ☐	10W
GEM-P - 2...3 ☐	14W

***** Coil is wider for 8x5mm and 9.5x6.5mm

(3) DC 14W - Max 70% duty cycle

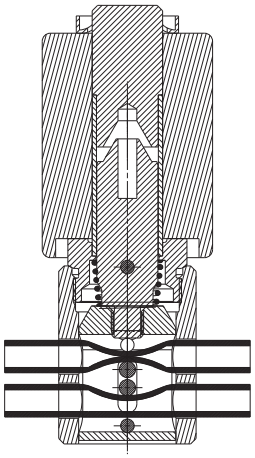
* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | P32 (GEM-P) Special
Pinch Valve 3 Way

Technical Data

Function	3 Way
Tubes	Silicone tubes : 6x4mm
Pressure range	0-1 bar
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials	**Valve:** Aluminium **Solenoid Operator:** Stainless Steel AISI 300 & 400 series
Materials in contact with media	None * fluid flows through silicone tube
Applications	Where corrosive or contaminated fluid must be controlled, such as in : • Laboratories • Industrial and irrigation control • Analysis devices
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal • DC 14W - max 70% duty cycle • Ton = 7 [min] max
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• For AC, use rectifier connector.

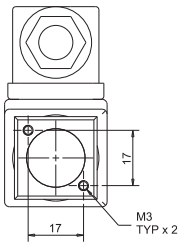


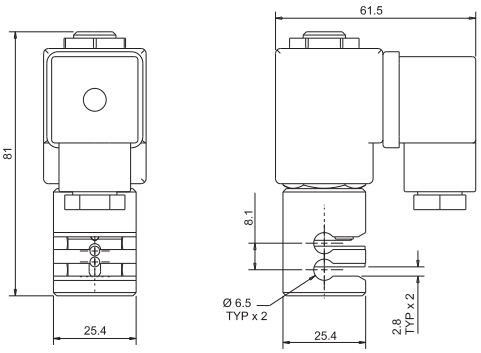
Voltage & Power Consumption

DC (W)				
V	14	10	5.5	3.5
6				
12				
24	•			
48				
110				
120				
220				
230				
240				

• Available options

Dimensions





* To order valves manufactured according to your specific requirements, please contact our technical sales department.

Refrigeration

GEM-SOL® | R32 (GEM-R) Special

For air conditioning systems 2 Way NC

Technical Data

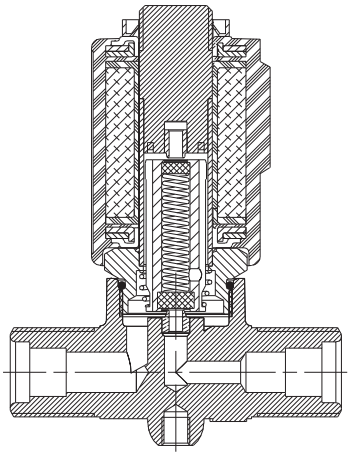
Function	2 Way NC
Orifice size	See table
Pressure range	See table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Brass **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR for R-134a Neoprene for R12 & R22
Media	Refrigeration fluids
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• ADC valves are only suitable for use with AC8W or DC10W coils.

5/8" NF O-ring

Max. Pressure (bar) 2 Way NC

Coil Current/Power	Orifice(mm)
	2.4
AC8W, DC10W	30
Flow factor Kv(l/min)	3.5



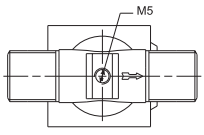
Flow direction →

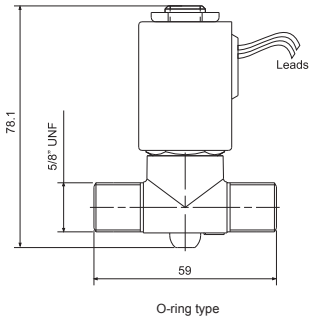
Voltage & Power Consumption

	AC (W)							DC (W)		
	50 Hz			60 Hz						
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•		
12	•			•			•		
24	•			•			•		
48	•			•			•		
110	•			•			•		
120	•			•					
220	•			•			•		
230	•			•					
240	•			•			•		

• Available options

Dimensions





O-ring type

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | A3P32 (GEM-A3P)

Latch 3 positioning manual override
2 Way, 3 Way NC, NO

Technical Data

Function	2 Way, 3 Way NC, NO
Ports size	1/8" and 1/4" BSP & NPT
Orifice size	See table
Pressure range	See table
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Manual override:** Plastic (Reinforced Nylon) **Main Valve:** Brass **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM, FFKM
Media	Air, water, oil
Coil type	Latch
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

* Available with a manifold bracket upon request.
Please contact our technical sales department.

Max. Pressure (bar) 2 Way NC

Orifice (mm)	0.8	1.2	1.6	2.0	2.4	3.0	4.0
Pressure (bar)	16	16	16	16	16	16	8
Flow factor Kv(l/min)	0.5	1.1	1.7	2.5	3.5	4.5	5

Max. Pressure (bar) 2 Way NO

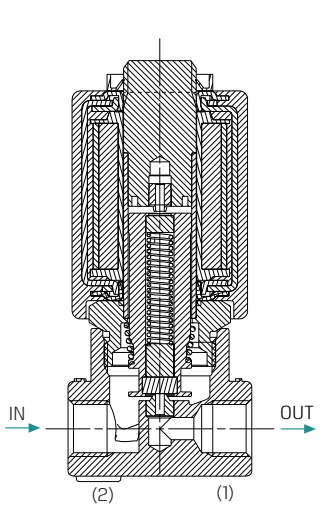
Orifice (mm)	0.8	1.2	1.6	2.0	2.4	3.0
Pressure (bar)	16	16	16	16	15	10
Flow factor Kv(l/min)	0.5	1.1	1.7	2.5	3.5	4.5

Max. Pressure (bar) 3 Way NC

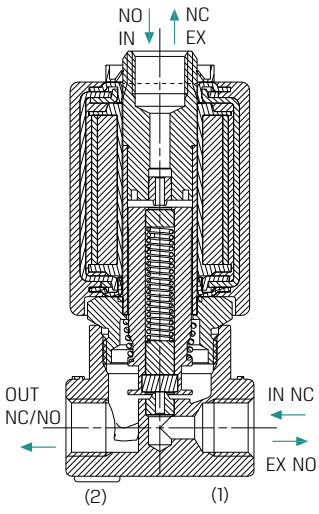
Orifice (mm)	0.8	1.2	1.6	2.0	2.4	3.0
Pressure (bar)	16	16	16	14	9	5
Flow factor Kv(l/min)	0.5	1.1	1.7	2.5	3.5	4.5

Max. Pressure (bar) 3 Way NO

Orifice (mm)	0.8	1.2	1.6	2.0	2.4	3.0
Pressure (bar)	16	16	16	12	10	7
Flow factor Kv(l/min)	0.5	1.1	1.7	2.5	3.5	4.5



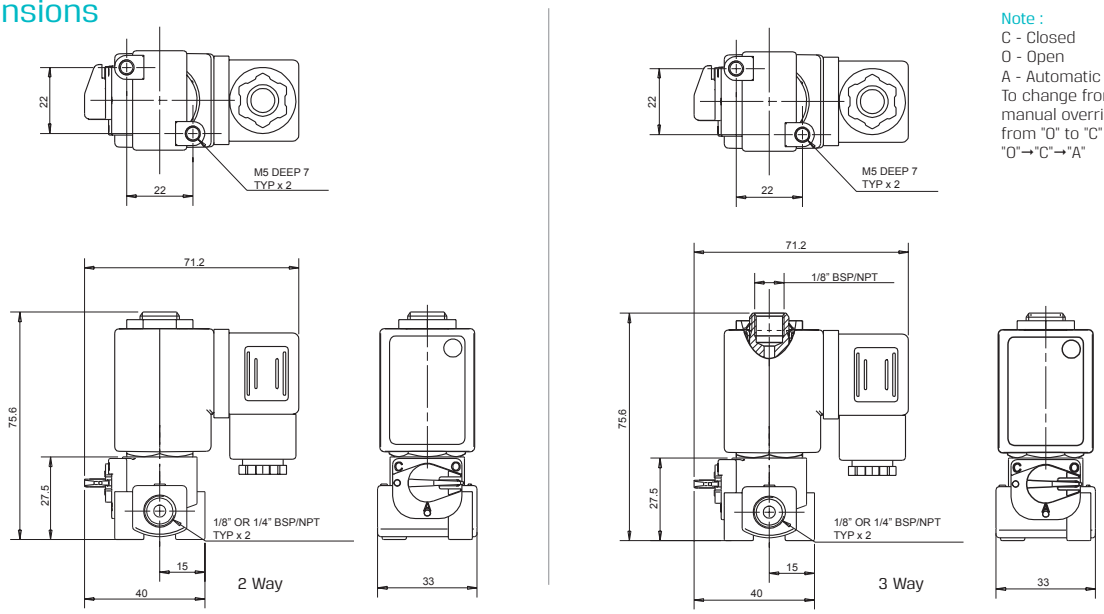
2 Way



3 Way

GEM-SOL® | **A3P32** (GEM-A3P) | Latch 3 positioning manual override
2 Way, 3 Way NC, NO

Dimensions



Note :
C - Closed
O - Open
A - Automatic
To change from "O" to "A", the manual override must be turned from "O" to "C" and then to "A" :
"O"→"C"→"A"

How to Order

GEM-A3P	-	BODY		PORT		FUNCTION		ORIFICE		SEALS		-	LATCH TYPE (1)		CONNECTOR	
		Brass	2	1/8" BSP	10	2W NC	1	0.8	1	NBR	N		2Ω	LDO	with	1
				1/8" NPT	11	2W NO	2	1.2	2	FKM	V		5Ω	IL	with 1/2" Hub	5
				1/4" BSP	20	3W NC	3	1.6	3	EPDM	E		13Ω	EL	connector with moulded cable	7
				1/4" NPT	21	3W NO	4	2.0	4	FFKM	K		20Ω	OL	other	9
								2.4	5				53Ω	DL		
								3.0	6							
								4.0	7							

Example : **GEM-A3P-21015N-LD01**

GEM-SOL® A3P32 (GEM-A3P) Latch 3 positioning manual override, Brass, 1/8" BSP, 2W NC, 2.4 orifice, NBR, 2Ω latch with connector.

(1) Choose latch type according to which latch system you have.

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | LDOS32 (LDOS) Special

Long distance operating solenoid

A small section conductor can be used at a distance of up to 5 kms

LDOS unit

Assembled with S32 (GEM-S) solenoid

Assembled with A32 (GEM-A) solenoid

Technical Data

Current	**24V AC** : Inrush 210mA | Holding 18mA **12V DC** : Inrush 120mA | Holding 5mA
Pressure range	See table
Delay time	See table
Connection	DIN 43650 Connecting box
Ambient temp	-10°C to 70°C
Operation	Only with a Baccara valve
Applications	• Cost saving wiring for remote solenoid operation • Power saving and heat prevention on continuous energized solenoid
Voltage	• Voltage and power consumption - see table • +10% -10% of nominal
Standard protection class	IP65 with connector

* For recommended wire parameters, please refer to Long distance operators charts

Pressure (bar)

Function	Orifice (mm)	Pressure
3 Way NC	1.6	16
	2.0	10
	2.4	8
3 Way NO	1.6	16
	2.0	12
	2.4	8

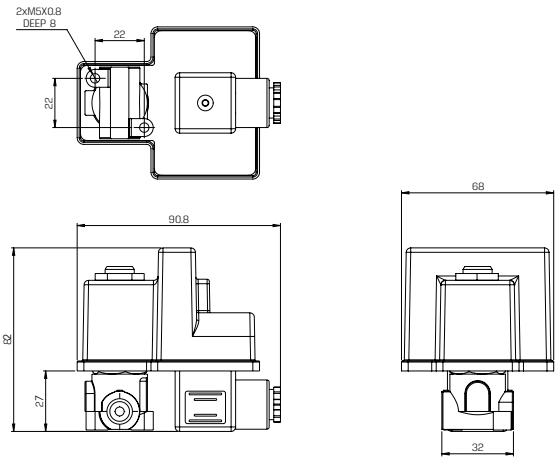
Delay time (sec) at a nominal voltage	Distance (Km)	Conduit Section (mm)
4-5	2.4	0.5
	4.8	1.0
	7.5	1.5

Voltage & Power Consumption

	AC (W)		DC (W)
	50 Hz	60 Hz	
V			
12			•
24	•	•	

• Available options

Dimensions



How to Order

LDOS	-	VOLTAGE	-	Please refer to the "How to Order" definitions of the assembled GEM-SOL® valve

24V AC	1
12V DC	2

Example : **LDOS-1-GEM-A-21035NO**

GEM-SOL® LDOS32 (LDOS), 24V AC is attached to a GEM-SOL® latch coil, direct operated, Brass, 1/8"BSP, 3W NC, 2.4 orifice, NBR, no manual override

GEM-SOL® | LD032 (GEM-LDO)

Long distance operator 2 Way, 3 Way NC, NO

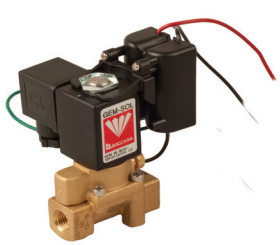
A small section conductor can be used at a distance of up to 5 kms

Technical Data

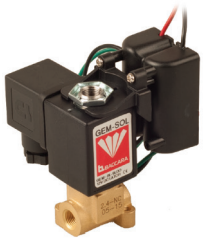
Function	2 Way, 3 Way NC, NO
Current	Holding 4mA
Pressure range	Refer to working pressure definitions of the valve that the GEM-LDO is assembled on, with DC10W / AC8W
Power	• **DC12V** (0.05W) up to **DC24V** (0.1W) • **24V AC**: 0.3W
Connection	Red/Black - power supply | Green/Black - coil Lead wire length - 28cm PVC coated AWG 18 UL 1007
Ambient temp	-10°C to 70°C
Operation	Only with GEM-BL-LDO coil and Baccara valve
Applications	• Cost saving wiring for remote solenoid operation • Power saving and heat prevention on continuous energized solenoid
Voltage	Voltage and power consumption - see table
Standard protection class	IP67 : LD032 (GEM-LDO) only

* For recommended wire parameters, please refer to Long distance operators charts

LDO unit



Assembled with S32 (GEM-S) solenoid



Assembled with A32 (GEM-A) solenoid

Voltage	Distance (km)	Conduit section (mm²)	Delay Time (sec)	
			On	Off
12/24	5	0.5	3	1

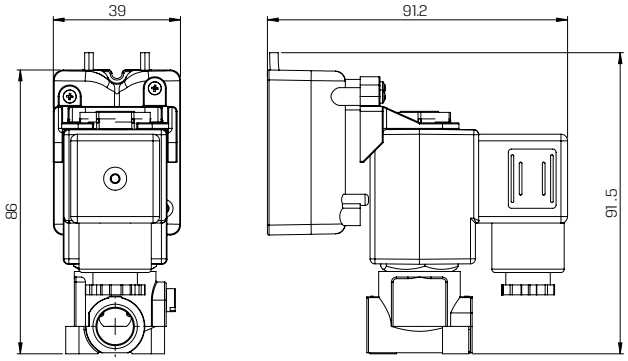
* Max conduit resistance 390Ω at nominal voltage

Voltage & Power Consumption

	AC (W)		DC(W)	
	50 Hz	60 Hz		
V	0.3	0.3	0.05	0.1
12			•	
24	•	•		•

• Available options

Dimensions



How to Order

GEM-LDO	-	VOLTAGE	-	Please refer to the "How to Order" definitions of the assembled GEM-SOL® valve

24VAC & 12-24VDC	9

Example : **GEM-LDO-9-GEM-A-21035NO**

GEM-SOL® LD032 (GEM-LDO), No label, is attached to a GEM-SOL® latch coil, Brass, 1/8"BSP, 3W NC, 2.4 orifice, NBR, no manual override

* To order operators manufactured according to your specific requirements, please contact our technical sales department.

Sub-base

GEM-SOL® | H32 (GEM-H)

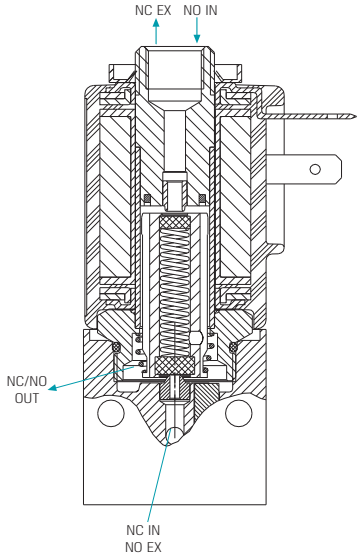
Type HF (CNOMO) 3 Way NC, NO

Technical Data

Function	3 Way NC, NO
Ports size	Ø 2.7mm holes
Orifice size	See table
Pressure range	See table • Higher pressures are available
Kv (l/min)	See table
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Aluminium **Solenoid Operator:** Stainless Steel AISI 300 & 400 series **Seals:** NBR, FKM, EPDM
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

Max. Pressure (bar) 3 Way NC

Coil Current/Power	Orifice (mm)					
	0.8	1.2	1.6	2.0	2.4	3.0
ADC *	23	20	15	10	8	5.5
AC8W, DC10W	35	30	17	14	10	6
AC5.5W	23	20	15	10	8	5.5
AC2.5W, DC5.5W, DC3.5W	20	16	10	9	5	4
Flow factor Kv(l/min)	0.6	1.1	1.7	2.5	3.5	4.5



Max. Pressure (bar) 3 Way NO

Coil Current/Power	Orifice (mm)					
	0.8	1.2	1.6	2.0	2.4	3.0
ADC *	25	20	15	11	8	6
AC8W, DC10W	30	22	17	12	10	7
AC5.5W,DC5.5W	25	20	15	11	8	6
AC2.5W, DC3.5W	20	18	12	8	6	4
Flow factor Kv(l/min)	0.6	1.1	1.4	2.2	3.0	3.5

* ADC valves are only suitable for use with AC8W or DC10W coils.

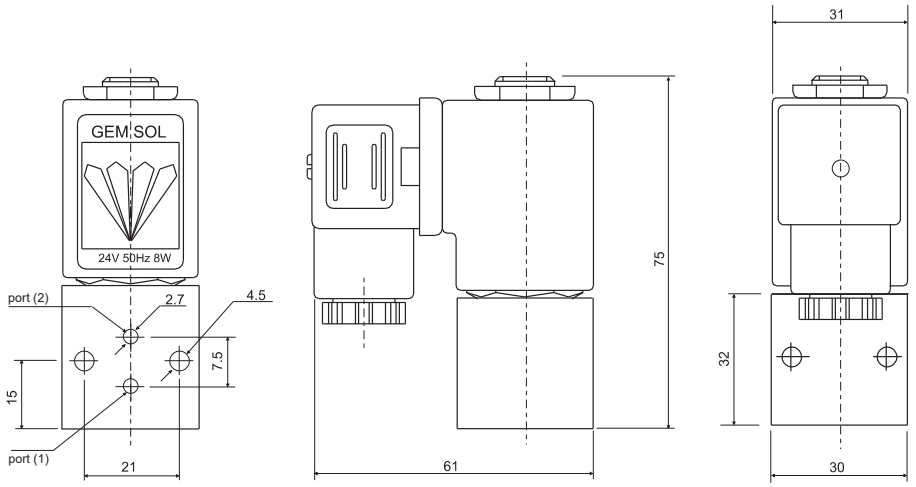
Voltage & Power Consumption: NC & NO valves

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•	•	•
12	•			•			•	•	•
24	•	•	•	•	•	•	•	•	•
48	•			•			•		
110	•			•	•		•		
120	•			•	•				
220	•	•	•	•			•		
230	•	•		•	•				
240	•			•			•		

• Available options

GEM-SOL® | **H32** (GEM-H) | Type HF (CNOMO) 3 Way NC, NO

Dimensions



How to Order

GEM-H	-	BODY		FUNCTION		ORIFICE		SEALS		-	VOLTAGE		POWER		CONNECTOR	
		Aluminium	1	3W NC	3	0.8	1	NBR	N		without coil	0	No coil	0	with	1
				3W NO	4	1.2	2	FKM	V		6	1	AC8W 50Hz	1	with LED	2
						1.6	3	EPDM	E		12	2	AC8W 60Hz	2	**flying leads coil ***	**4**
						2.0	4				24	3	DC 10W	3	with 1/2" Hub	5
						2.4	5				48	4	AC 5.5W 50Hz	4	**surge protection with LED ***	**6**
						3.0	6				110	5	AC 5.5W 60Hz	5	connector with moulded cable	7
											120	6	AC 2.5W 50/60Hz	6	other	9
											220	7A	DC 5.5W	7		
											230	7	DC 3.5W	8		
											240	8				
											Latch/other * (1)	**9**				

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-H-135N-311**

GEM-SOL® H32 (GEM-H) Type HF (CNOMO), Aluminium, 3W NC, 2.4 orifice, NBR,
24V AC8W 50Hz with connector

(1) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table.

* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied.

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | GEM-BP Special
IP68 Coil

Technical Data

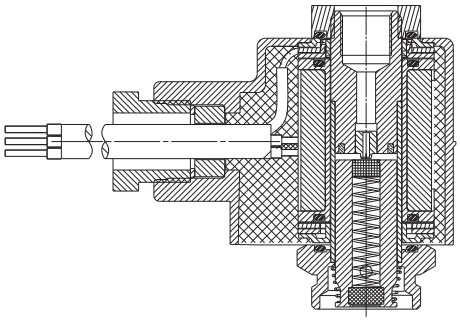
Construction	Housing : encapsulated Polyurethane
Coil winding insulation	H 180°C
Temperature range	**Ambient :** -5°C to 50°C (no icing)
Duty cycle	100% ED
Protection	IP68 infinite time immersion under water, up to 2m depth
Electrical connection	3x18 AWG (0.75mm²), hook up wire, 200cm * other lengths are available
Assembly	In any position
Coil fixing	One nut G1/4" hexagonal 19mm
Standard / Certification	European Standards IEC 60529 code IP68
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ±10% of nominal

• The coil should not be energized without being assembled on the operator

Power Consumption (AC)

Type	Inrush	Holding	Cos Ø
8W	1800 [mA]	680 [mA]	0.46
5.5W	1700 [mA]	580 [mA]	0.51
2.5W *	300 [mA]	190 [mA]	0.54

* + 2 Diodes



Power Consumption (DC)

Type
10W
5.5W
3.5W

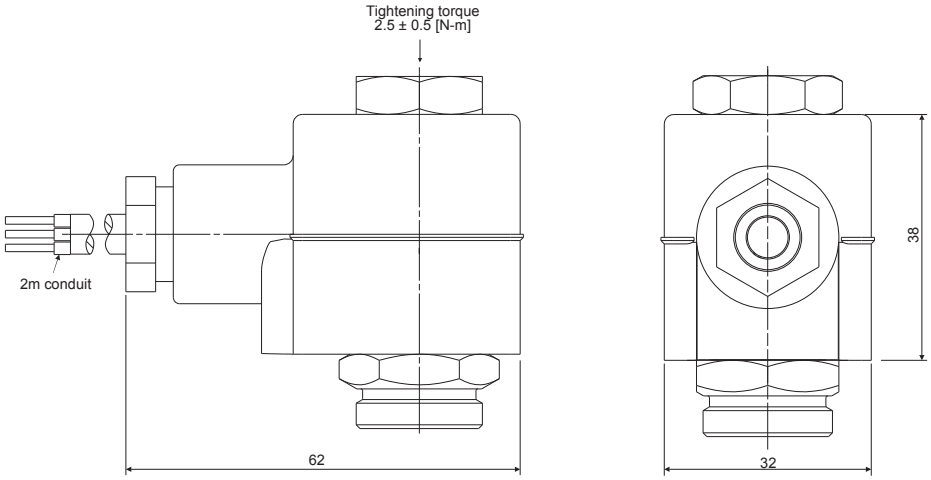
Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6									
12	•			•			•	•	•
24	•	•	•	•	•	•	•	•	•
48									
110									
120									
220									
230									
240									

• Available options

GEM-SOL®| GEM-BP | IP68 Coil

Dimensions



How to Order

GEM-BP	-	VOLTAGE		POWER [1]	
		12	2	AC8W 50Hz	1
		24	3	AC8W 60Hz	2
				DC10W	3
				AC5.5W 50Hz	4
				AC5.5W 60Hz	5
				AC2.5W 50/60Hz	6
				DC5.5W	7
				DC3.5W	8
				2Ω	LDO
				5Ω	IL
				13Ω	EL
				20Ω	OL
				53Ω	DL

Example : **GEM-BP-31**

GEM-SOL® GEM-BP IP68 Coil, 24V AC8W 50Hz

(1) For Latch : choose type according to which latch system you have

* To order coils manufactured according to your specific requirements, please contact our technical sales department.

BACCARA®
AUTOMATION & CONTROL

COILS & OPERATORS

Tackling climate
change together

COILS & OPERATORS

Coils

GEM-SOL® | G80-B

Coil

Technical Data

Coil winding insulation	F 155°C
Temperature range	**Coil** : -20°C to 120°C | **Ambient** : -20°C to 50°C
Construction	in accordance with EN 60204.1
Duty cycle *	100% ED
Electrical connection	• AMP 6.3x0.8, DIN 43650, 2 poles + 1 earth • 2 flying leads, 20AWG
Connector	• DIN 43650 • Fixture : M3 screws, 2 positions at 180° * Max. tightening torque for the connector screw : 0.5 Nm
Assembly	On a valve, 4 positions at 90°
Coil fixing	On a G80 operator with M8x0.75 nut
Impregnation	Optional
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ±10% of nominal
Standard protection class	IP65 with connector

• The coil should not be energized without being assembled on the operator
* Please consult with our technical sales department :
  • for further information on using different power coils (not shown in the table)
  • for long term operation

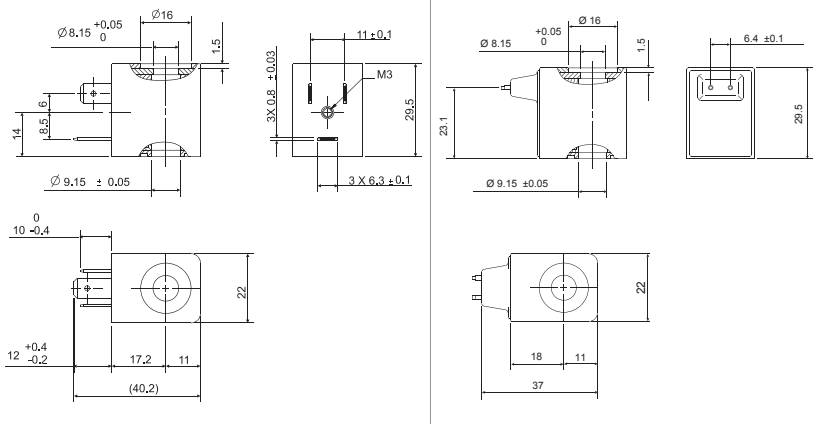
Power Consumption (AC)

Type	50 Hz	
	Inrush	Holding
8.5W	12.5VA	10.5VA
5W	7VA	5VA

Power Consumption (DC)

Type
6W
3W

Dimensions



Voltage & Power Consumption

	AC (W)				DC (W)	
	50 Hz		60 Hz			
V	8.5	5	6	3	6	3
6					•	•
12	•	•	•	•	•	•
24	•	•	•	•	•	•
110	•	•	•	•		
230	•	•	•	•		

• Available options

How to Order

G80-B	-	VOLTAGE		POWER		CONNECTOR	
		6	1	AC8.5W 50Hz	1	with	1
		12	2	AC6W 50Hz	2	**flying leads coil ***	**4**
		24	3	DC6W	3		
		110	5	AC5W 50Hz	4		
		230	7	AC3W 60Hz	5		
				DC3W	7		

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **G80-B-331**

GEM-SOL® G80-B Coil, 24VDC 6W with connector.

* To order coils manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | GEM-BL

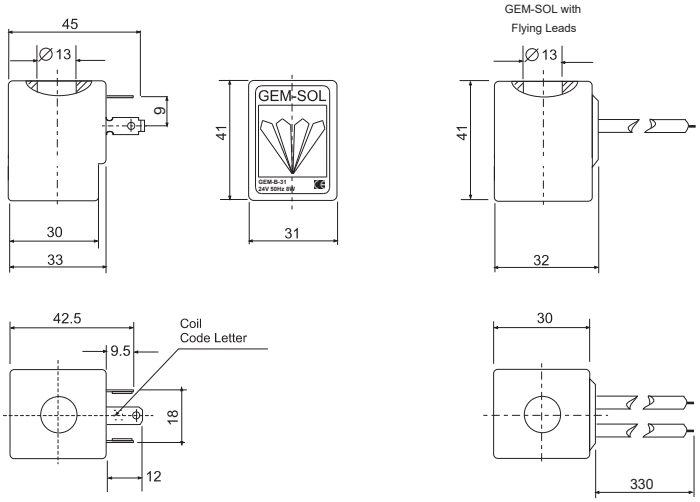
Latch Coil

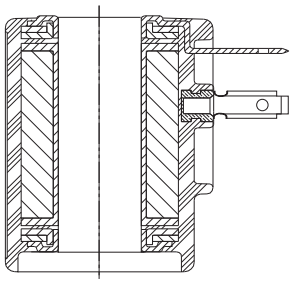
Technical Data

Coil winding insulation	H 180ºC
Temperature range	**Coil :** -20ºC to 150ºC | **Ambient :** -20ºC to 70ºC
Electrical connection	• AMP pins, DIN 46242, 2 poles + 1 earth • 2 flying leads, 18 AWG (0.75mm²), 330 mm length
Connector	• DIN 43650 • PG9 or 1/2" NPT * Max. tightening torque for the connector screw : 0.5 Nm
Assembly	In any position
Coil fixing	One nut G1/4" hexagonal 19mm
Typical pulse time	30~50ms
Impregnation	Optional
Standard / Certification	CE, RU
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• The coil should not be energized without being assembled on the operator
* The coil, including its magnetic circuit and permanent magnets, is encapsulated in high temperature resistant nylon to withstand humidity and meet heavy duty requirements.

Dimensions





How to Order

GEM-BL –	LATCH TYPE (1)		CONNECTOR	
	2Ω	LDO	with	1
	5Ω	IL	**flying leads coil ***	**4**
	13Ω	EL	with 1/2" Hub	5
	20Ω	OL	connector with moulded cable	7
	53Ω	DL	other	9

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-BL-LDO1**

GEM-SOL® GEM-BL Latch Coil, 2Ω with connector.

(1) Choose latch type according to which latch system you have.

When ordering for a new application, please inform us of your requirements according to the table below. This will enable us to determine the most suitable coil.

VOLTAGE	OPERATING METHOD	MAX CURRENT [A] ON COIL	CAPACITOR [µF]	SWITCHING TIME [ms]
3	Direct	≤2	None	≤25
6	Capacitor	≤1	2200	≤50
9		≤0.5	4700	≤100
12		≤0.1	other	other
24		other		
230				
Other				

Example : **12V DC, Capacitor, ≤1,4700, ≤50ms**

* To order coils manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | GEM-B
Coil

Technical Data

Coil winding insulation	H 180°C
Temperature range	**Coil :** -20°C to 150°C | **Ambient :** -20°C to 70°C
Duty cycle *	100% ED
Electrical connection	• AMP pins, DIN 46242, 2 poles + 1 earth • 2 flying leads, 18 AWG (0.75mm²), 330 mm length
Connector	• DIN 43650 • PG9 or 1/2" NPT * Max. tightening torque for the connector screw : 0.5 Nm
Assembly	In any position
Coil fixing	One nut G1/4" hexagonal 19mm
Impregnation	Optional
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ±10% of nominal
Standard / Certification	CE, RU
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• The coil should not be energized without being assembled on the operator
* Please consult with our technical sales department :
• for further information on using different power coils (not shown in the table)
• for long term operation

DIN Connector

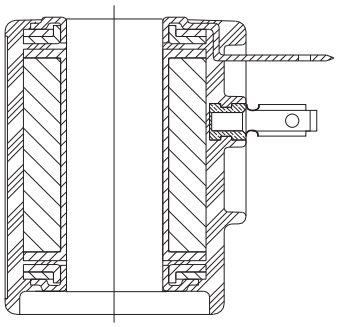
Flying Leads

LED Connector

Power Consumption (AC)

Type	Inrush	Holding	Cos Ø
8W	1800 [mA]	680 [mA]	0.46
5.5W	1700 [mA]	580 [mA]	0.51
2.5W *	300 [mA]	190 [mA]	0.54

* + 2 Diodes



Power Consumption (DC)

Type
10W
5.5W
2.5W

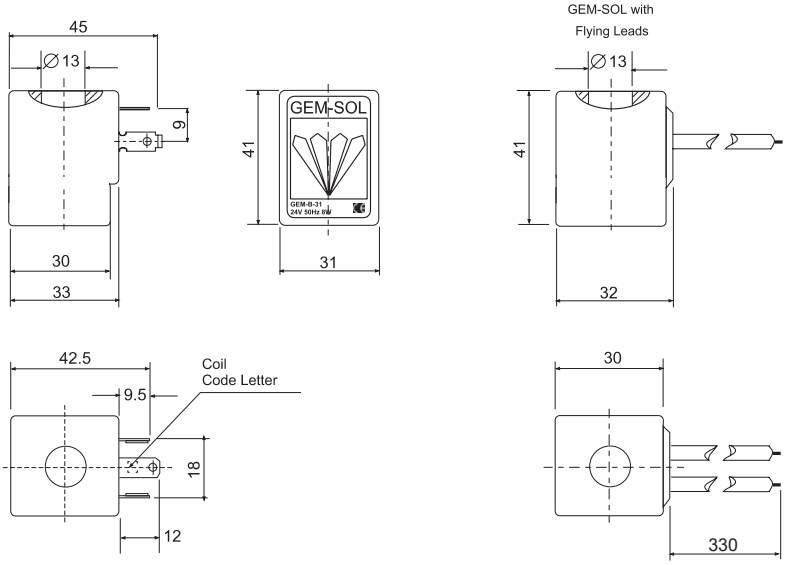
Voltage & Power Consumption

	AC (W)							DC (W)		
	50 Hz			60 Hz						
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•	•	•
12	•			•			•	•	•
24	•	•	•	•	•	•	•	•	•
48	•			•			•		
110	•			•	•		•		
120	•			•	•				
220	•	•	•	•			•		
230	•	•		•	•				
240	•			•			•		

• Available options

GEM-SOL® | GEM-B | Coil

Dimensions



How to Order

GEM-B	-	VOLTAGE		POWER		CONNECTOR	
		6	1	AC8W 50Hz	1	with	1
		12	2	AC8W 60Hz	2	with LED	2
		24	3	DC10W	3	**flying leads coil ***	**4**
		48	4	AC5.5W 50Hz	4	with 1/2" hub	5
		110	5	AC5.5W 60Hz	5	**surge protection with LED ***	**6**
		120	6	AC2.5W 50/60Hz	6	connector with moulded cable	7
		220	7A	DC5.5W	7	other	9
		230	7	DC3.5W	8		
		240	8				
		Latch/other* (1)	**9**				

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-B-341**

GEM-SOL® GEM-B Coil, 24V AC 5.5W 50Hz with connector.

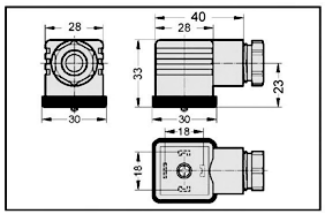
(1) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table.

* To order coils manufactured according to your specific requirements, please contact our technical sales department.

KA DIN 43650-A | GEM-SOL® Coils | ISO 4400

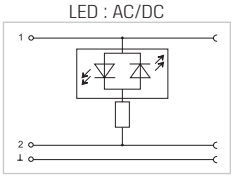
Description

Housing	black/grey/transparent
Contacts	screw with conductor protection
Number of poles	2 or 3 + ⏚
Contact spacing	18 mm
Cable entry	PG9 - PG11 - 1/2 NPTF
Gasket	NBR profile (other types on request)
Fixing screw	M3 x 32 * Max. tightening torque for the connector screw : 0.5 Nm
Earth position	H12 (opposite to cable entry)
Protection class	IP65 (mated)
Max. conductor section	1.5 mm²
Standard circuits (housing black-grey)	See "How to Order" coding
Standard circuits (transparent housing)	See "How to Order" coding
LED color (transparent)	Amber



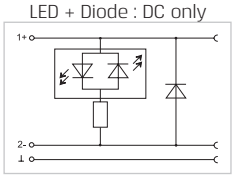
Circuit Versions

LED : AC/DC



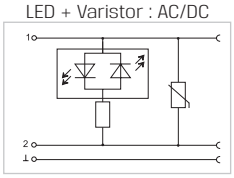
12/24/48
120/230 [V]

LED + Diode : DC only



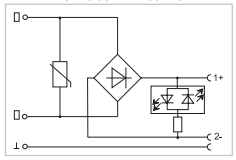
12/24/48 [V]

LED + Varistor : AC/DC



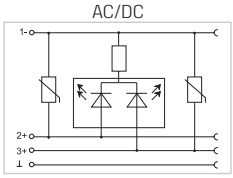
12/24/48
120/230 [V]

Bridge rectifier + LED + Varistor : AC/DC



12/24/48
120/230 [V]

2xLED + 2x; Varistor : AC/DC

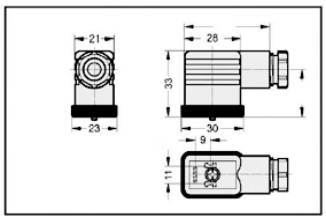


12/24/48
120/230 [V]

KA DIN 43650-B | A22 (G80) Coils | Industrial

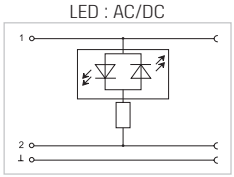
Description

Housing	black/grey/transparent
Contacts	screw with conductor protection
Number of poles	2 or 3 + ⏚
Contact spacing	11 mm
Cable entry	PG7 - PG9
Gasket	NBR profile (other types on request)
Fixing screw	M3 x 32 * Max. tightening torque for the connector screw : 0.5 Nm
Earth position	H12 (opposite to cable entry)
Protection class	IP65 (mated)
Max. conductor section	1.5 mm²
Standard circuits (housing black-grey)	See "How to Order" coding
Standard circuits (transparent housing)	See "How to Order" coding
LED color (transparent)	Amber



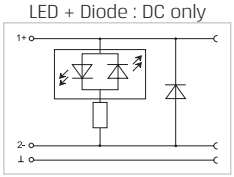
Circuit Versions

LED : AC/DC



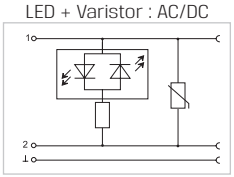
12/24/48
120/230 [V]

LED + Diode : DC only



12/24/48 [V]

LED + Varistor : AC/DC

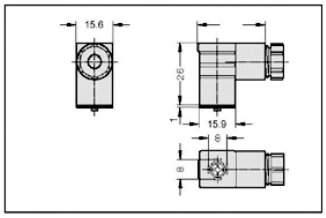


12/24/48
120/230 [V]

KA DIN 43650-C | A16 (G65) Coils

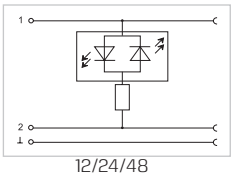
Description

Housing	black/grey/transparent
Contacts	screw with conductor protection
Number of poles	2 or 3 + ⏚
Contact spacing	8 mm
Cable entry	PG7
Gasket	NBR flat (other types on request)
Fixing screw	M2.5 x 28 * Max. tightening torque for the connector screw : 0.5 Nm
Earth position	H6 (next to cable entry)
Protection class	IP65 (mated)
Max. conductor section	0.75 mm²
Standard circuits (housing black-grey)	See "How to Order" coding
Standard circuits (transparent housing)	See "How to Order" coding
LED color (transparent)	Amber



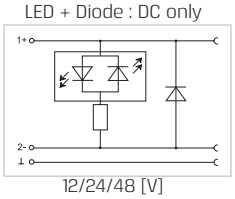
Circuit Versions

LED : AC/DC



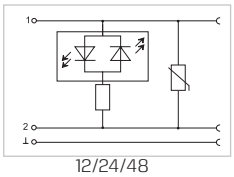
12/24/48
120/230 [V]

LED + Diode : DC only



12/24/48 [V]

LED + Varistor : AC/DC



12/24/48
120/230 [V]

Technical Data

DESCRIPTION	STANDARD	VALUE
No. of contacts		2 or 3 + ⏚
Cable entry	P67	cable OD 4-6 mm
	PG9	cable OD 6-8 mm
	PG11	cable OD 8-10 mm
	1/2 NPT	cable OD 8-10 mm
Fixing system		central fixing screw
Termination		screw
Max. contact screw torque	VDE 0627	0.5 Nm
Contact surface		silver plated
Contact material		Cu Sn
Conductor cross-section		0.5 .....1.5 mm²
Housing material		PA + G
Flammability		UL94-V0 on request
Insert material		PA + G
Insert material		NBR or silicon
Protection class (mated)	IEC 60 529	IP65 (mated)
Operating temperature		-40°C / + 125°C
Nominal current		10A (6A KC-KD)
Max. contact current	IEC 60 512-3	max. 16A / 40°C (10A KC-KD)
Rated voltage	IEC 60 664	250V AC / 300V DC
Rated impulse voltage	IEC 60 664	5 kV
Overvoltage category	IEC 60 664	III
Contact resistance	IEC 60 512-2	≤4mΩ
Insulation resistance		VDE 0110 1/89-Class C
Pollution degree	IEC 60 664	3

GEM-SOL® | G80-O

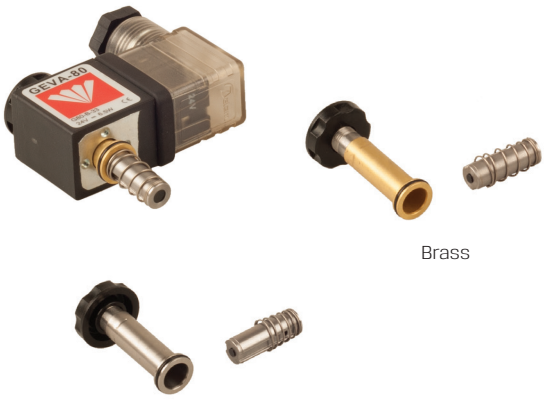
Operator 2 Way, 3 Way NC, NO

Applicable for GEM-SOL® A22(G80-A) & M22(G80-M) valves

Technical Data

Function	2 Way, 3 Way NC, NO
Orifice size	1, 1.2, 1.6mm
Pressure range (bars)	See solenoid valve performances
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Response time	5 to 12 ms
Materials in contact with media	**Operator:** Brass or Stainless Steel. AISI 300 & 400 series **Shading ring:** Copper Note : Operator for DC is without shading ring and may not be used for AC **Orifice:** Stainless Steel **Spring:** Stainless Steel AISI 300 series
Media	Air, inert gases, water *
Threads on operator tube	M8x0.75 male and M5 or #10UNF female to connect exhaust, muffler etc.
Operator assembly	Fix the coil with one M8 nut. Max. tightening torque : 2 N/m
Coil fixing	On a G80 operator with M8x0.75 nut
Coil data	See technical G80 coil data
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ±10% of nominal

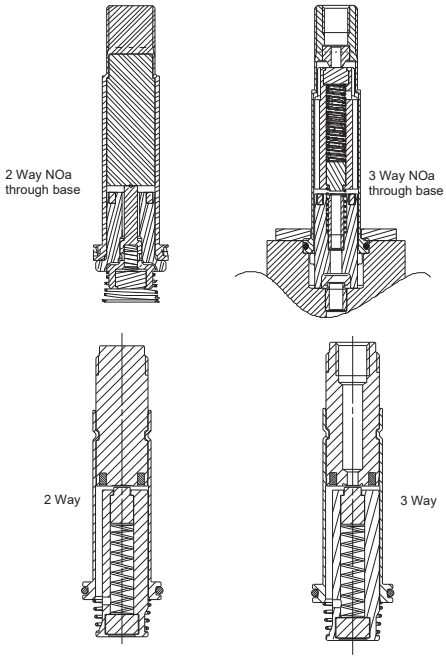
* For other fluids and for use in abnormal conditions, please contact our technical sales department



Voltage & Power Consumption

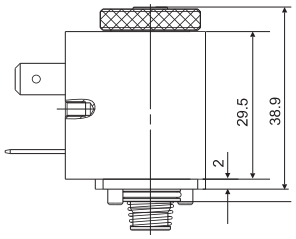
	AC (W)				DC (W)	
	50 Hz		60 Hz			
V	8.5	5	6	3	6	3
6					•	•
12	•	•	•	•	•	•
24	•	•	•	•	•	•
110	•	•	•	•		
230	•	•	•	•		

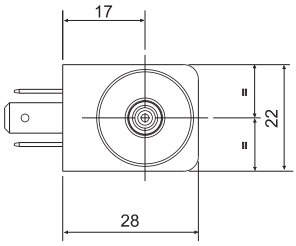
• Available options



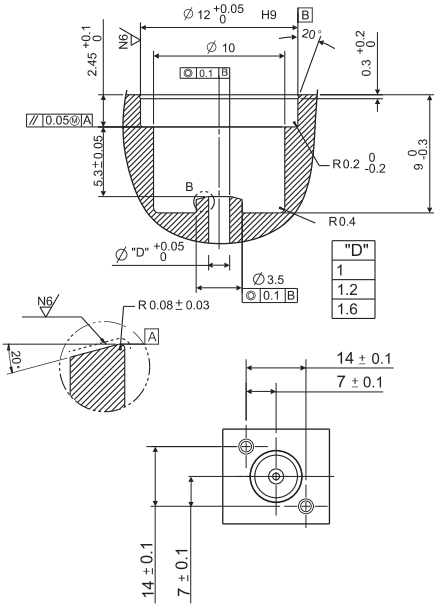
GEM-SOL® | G80-0 | Operator 2 Way, 3 Way NC, NO

Dimensions





Operator seat



How to Order

*** When ordering without coil, please define what current and pressure rating is needed (DC, AC)**

2 Way

G80-0	-	2W	TUBE		FUNCTION		CURRENT		-	SEALS		-	VOLTAGE		POWER		CONNECTOR	
			Brass	2	2W NC	1	DC	0		NBR	N		W/out coil	0	No coil	0	with	1
			Stainless Steel	3	2WNOa[2]	2a	AC	1		FKM	V		6	1	AC8.5W 50Hz	1	**surge protection with LED ***	**3**
										EPDM	E		12	2	AC6W 60Hz	2	**flying leads coil ***	**4**
										FFKM [3]	K		24	3	DC6W	3	other	9
													110	5	AC5W 50Hz	4		
													230	7	AC3W 60Hz	5		
															DC3W	7		

3 Way

G80-0	-	PORT		TUBE		FUNCTION		CURRENT		ORIFICE	
		M5	00	Brass	2	3W NC	3	DC	0	1	1
		#10UNF	01	Stainless Steel	3	3W NO	4	AC	1	1.2	2
		1/8"BSP[1]	10			3W NOa [2]	4a			1.6	3

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **G80-0-2W210-N-331**

GEM-SOL® G80-0 Operator, Brass tube, **2W NC**, DC, NBR, 24VDC 6W with connector.

Example : **G80-0-002302-N-331**

GEM-SOL® G80-0 Operator, M5, Brass tube, **3W NC**, DC, 1.2 orifice, NBR, 24VDC 6W with connector.

(1) Option available with use of an adaptor
(2) Supply pressure through base
(3) FFKM O-ring is available only upon request
When ordering FFKM seals, please consult with our technical sales department about O-ring compound
Available only in 2W NC

* To order operators manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | G80-OM

M12 Operator 2 Way, 3 Way NC, NO

Applicable for GEM-SOL® A22 (G80-A) valves

Technical Data

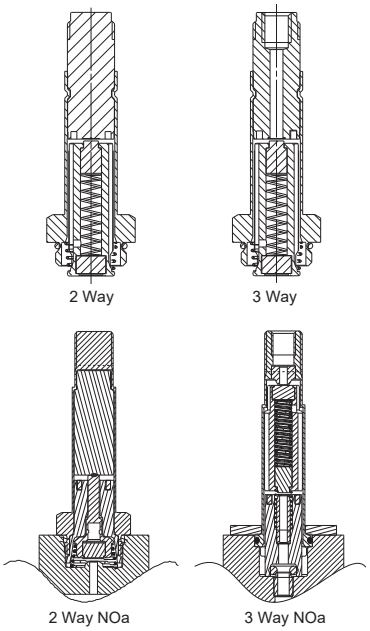
Function	2 Way, 3 Way NC, NO
Orifice size	1, 1.2, 1.6mm
Pressure range (bars)	See solenoid valve performances
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Response time	5 to 12 ms
Materials in contact with media	**Operator:** Brass or Stainless Steel AISI 300 & 400 series **Shading ring:** Copper Note : Operator for DC is without shading ring and may not be used for AC **Orifice:** Stainless Steel **Spring:** Stainless Steel AISI 300 series
Media	Air, inert gases, water*
Threads on operator tube	M8x0.75 male and M5 or #10UNF female to connect exhaust, muffler etc.
Operator assembly	Fix the coil with one M8 nut. Max. tightening torque : 2 N/m
Coil fixing	On a G80 operator with M8x0.75 nut
Coil data	See technical G80 coil & wide coil data
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ±10% of nominal

* For other fluids and for use in abnormal conditions, please contact our technical sales department

Voltage & Power Consumption

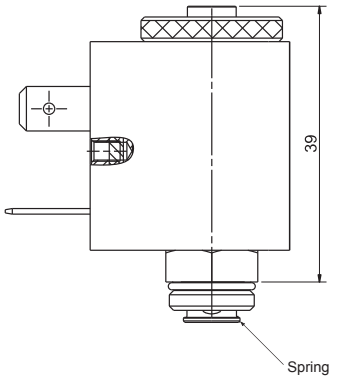
	AC (W)				DC (W)	
	50 Hz		60 Hz			
V	8.5	5	6	3	6	3
6					•	•
12	•	•	•	•	•	•
24	•	•	•	•	•	•
110	•	•	•	•		
230	•	•	•	•		

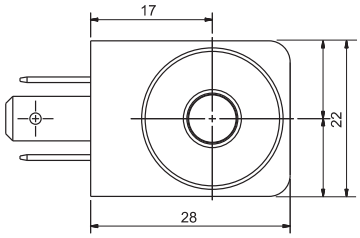
• Available options

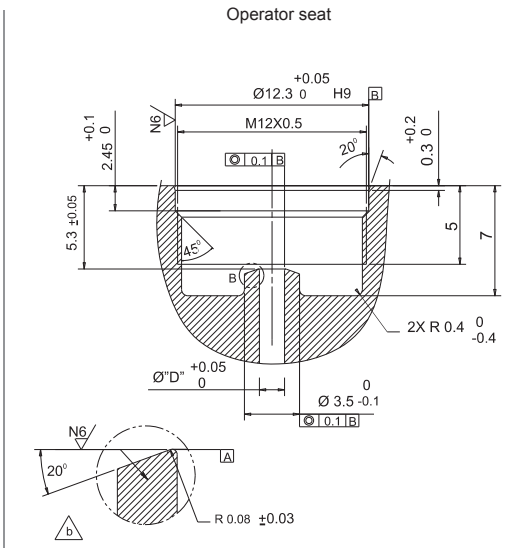


GEM-SOL®| G80-0M | M12 Operator 2 Way, 3 Way NC, NO

Dimensions







How to Order

*** When ordering without coil, please define what current and pressure rating is needed (DC, AC)**

2 Way

G80-0M	-	2W	TUBE	FUNCTION	CURRENT	-	SEALS	-	VOLTAGE	POWER	CONNECTOR
			Brass 2	2W NC 1	DC 0		NBR N		without coil 0	No coil 0	with 1
			Stainless Steel 3	2WNO 2	AC 1		FKM V		6 1	AC8.5W 50Hz 1	**surge protection with LED *** 3
				2WNOa(1) 2a			EPDM E		12 2	AC6W 60Hz 2	**flying leads coil *** 4
							Teflon T		24 3	DC6W 3	other 9
							FFKM (2) K		110 5	AC5W 50Hz 4	
									230 7	AC3W 60Hz 5	
										DC3W 7	

3 Way

G80-0M	-	PORT	TUBE	FUNCTION	CURRENT	ORIFICE
		None(2W) -	Brass 2	3W NC 3	DC 0	1 1
		M5 00	Stainless Steel 3	3W NO 4	AC 1	1.2 2
		#10UNF 01		3W NOa(1) 4a		1.6 3

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **G80-0M-2W210-N-331**

GEM-SOL® G80-0M Operator M12, Brass tube, 2W NC, DC, NBR, 24VDC 6W with connector.

Example : **G80-0M-002302-N-331**

GEM-SOL® G80-0M Operator M12, M5, Brass tube, 3W NC, DC, 1.2 orifice, NBR, 24VDC 6W with connector.

(1) Supply presssure through base
(2) 2 Way NC only

* To order operators manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | G80-OL

Latch Operator 2 Way, 3 Way NC, NO

Applicable for GEM-SOL® A22 (G80-A) & M22 (G80-M)* valves

* O-ring opertor type

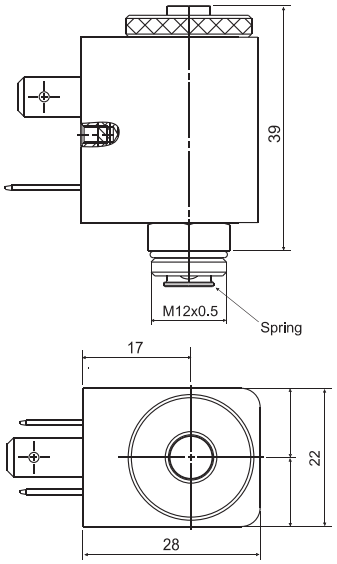
Technical Data

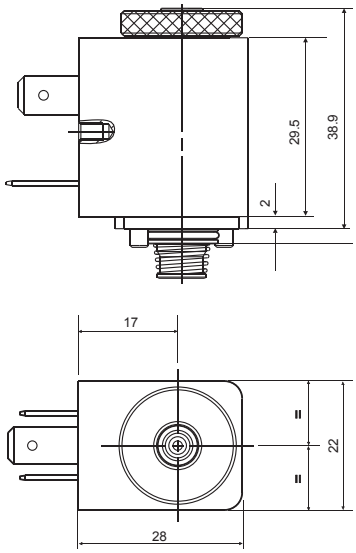
Function	2 Way, 3 Way NC, NO
Orifice size	1, 1.2, 1.6mm
Pressure range (bars)	See solenoid valve performances
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Response time	5 to 12 ms
Materials in contact with media	**Operator:** Brass or Stainless Steel AISI 300 & 400 series **Orifice:** Stainless Steel **Spring:** Stainless Steel AISI 300 series
Media	Air, inert gases, water*
Threads on operator tube	M8x0.75 male and M5 or #10UNF female to connect exhaust, muffler etc.
Operator assembly	Insert operator into cavity, tighten it by the flange and the two M3 screws. Fix the coil with one M8 nut. Max. tightening torque : 2 N/m
Coil fixing	On a G80 operator with M8x0.75 nut
Coil data	See technical G80 coil data
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ±10% of nominal
Operation	• Compatible with all G80 valves at 12 and 24V DC. Use "L" as the power indicator

* For other fluids and for use in abnormal conditions, please contact our technical sales department.

GEM-SOL®| G80-0L | Latch Operator 2 Way, 3 Way NC, NO

Dimensions





How to Order

*** When ordering without coil, please define what current and pressure rating is needed (DC, AC)**

G80-0L	-	TYPE	PORT	TUBE	FUNCTION	ORIFICE	SEALS	-	VOLTAGE	POWER	CONNECTOR
		"0" ring type Null	M5 00	Brass 2	2W NC 1	None (2W) 0	NBR N		without coil 0	No coil 0	with 1
		M12 M	#10 UNEF 01	Stainless Steel 3	3W NC 3	1 1	FKM V		6 1	Latch L	
		3/4" UNEF U	1/8" BSP 10		3W NO 4	1.2 2	EPDM E		12 2		
						1.6 3			24 3		

Example : **G80-0L-M00232N-3L1**

GEM-SOL® G80-0L Latch Operator, M12, M5 port, Brass tube, 3W NC, 1.2 orifice, NBR, 24V DC Latch with connector.

Please provide the following information so that we can determine the most suitable coil :

- Voltage range
- Circuit type
- Current limitation
- Capacitor size (µF)
- Switching time (msec)

* To order operators manufactured according to your specific requirements, please contact our technical sales department.

GEM-SOL® | GEM-O

Operator 2 Way, 3 Way NC, NO

Applicable for GEM-SOL® A32(GEM-A), S32(GEM-S) & Z32(GEM-Z) valves

Technical Data

Function	2 Way, 3 Way NC, NO
Orifice size	0.8 to 3mm
Pressure range (bars)	See solenoid valve performances
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Response time	16 to 36 ms complete cycle
Materials in contact with media	**Operator:** Stainless Steel AISI 300 & 400 series **Shading ring:** standard - Copper upon request - silver and aluminium Note : Operator for DC is without shading ring and may not be used for AC **Orifice:** Stainless Steel **Spring:** Stainless Steel AISI 300 series
Media	Air, gas, water, fuel, oil etc.
Threads on operator tube	G1/4" male and G1/8" or 1/8" NPT female to connect exhaust, muffler etc.
Operator assembly	By screwing M20x1 hexagonal 22mm to the valve body and fixing coil by one G1/4" hexagonal 19mm metal or plastic nut. • Max. tightening torque : 3 N/m
Coil fixing	Any position, can be turned 360° around the operator.
Coil data	See technical GEM-SOL® coil data
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ±10% of nominal

• ADC operators and valves are suitable for use with AC 8W or DC 10W.

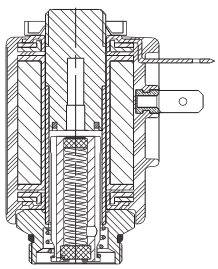
NO through base

Standard 2 Way/3 Way

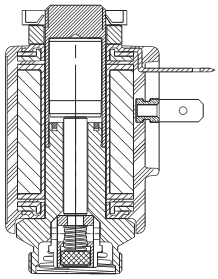
Voltage & Power Consumption

	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•	•	•
12	•			•			•	•	•
24	•	•	•	•	•	•	•	•	•
48	•			•			•		
110	•			•	•		•		
120	•			•	•				
220	•	•	•	•			•		
230	•	•		•	•				
240	•			•			•		

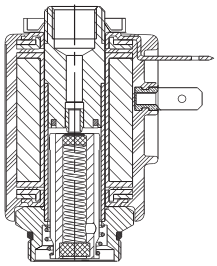
• Available options



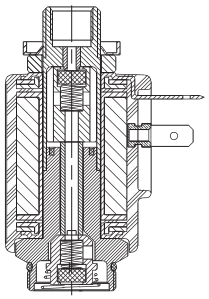
2 Way NC



2 Way NOa through base



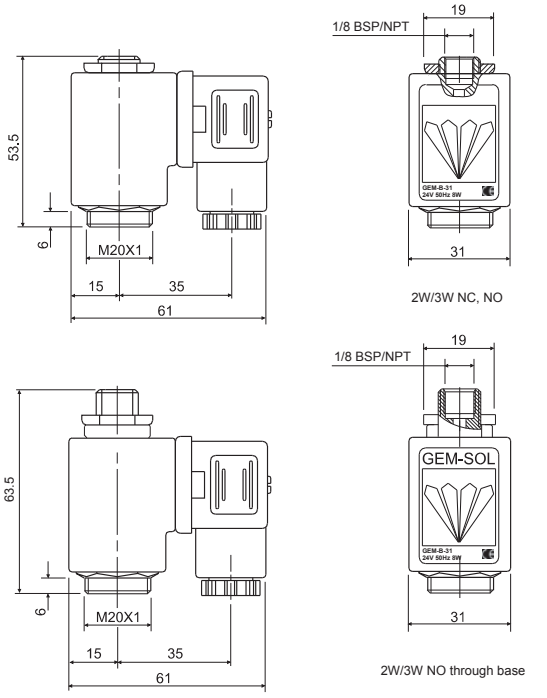
3 Way

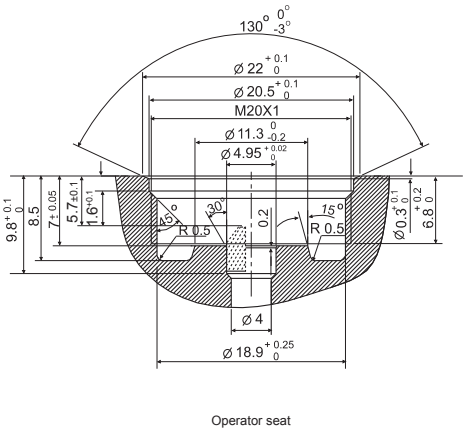


3 Way NOa through base

GEM-SOL®| GEM-O | Operator 2 Way, 3 Way NC, NO

Dimensions





Operator seat

How to Order

2 Way

GEM-O	-	2W	FUNCTION		-	SEALS		-	VOLTAGE		POWER		CONNECTOR	
			2W NC	1		NBR	N		without coil	0	No coil	0	with	1
			2W NO [1]	2a		FKM	V		6	1	AC8W 50Hz	1	with LED	2
						EPDM	E		12	2	AC8W 60Hz	2	**flying leads coil ***	**4**
						PTFE [3]	T		24	3	DC10W	3	with 1/2" Hub	5
						FFKM [2]	K		48	4	AC5.5W 50Hz	4	**surge protection with LED ***	**6**
									110	5	AC5.5W 60Hz	5	connector with moulded cable	7
									120	6	AC2.5W 50/60Hz	6	other	9
									220	7A	DC5.5W	7		
									230	7	DC3.5W	8		
									240	8				
									Latch/other * [4]	**9**				

3 Way

GEM-O	-	PORT		FUNCTION		ORIFICE	
		1/8"BSP	10	2W NO	2	0.8	1
		1/8"NPT	11	3W NC	3	1.2	2
				3W NO	4	1.6	3
				3W NO [1]	4a	2.0	4
						2.4	5
						3.0	6

*** SPECIAL OPTIONS |** Extended lead times, Non-stock items, MOQ may be applicable

Example : **GEM-O-2W1-N-341**

GEM-SOL® GEM-O Operator **2W NC**, NBR, 24V AC 5.5W 50Hz with connector

Example : **GEM-O-1034-V-341**

GEM-SOL® GEM-O Operator, 1/8"BSP, **3W NC**, Orifice 2.0, FKM, 24V AC 5.5W 50Hz with connector

(1) Supply pressure through base
(2) FFKM O-ring is available only upon request.
When ordering FFKM seals, please consult with our technical sales department about O-ring compound.
(3) For PTFE seals, the O-ring is FKM seal as default. Please contact us if you require a different O-ring material.
(4) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table.
* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied.

* To order operators manufactured according to your specific requirements, please contact our technical sales department.

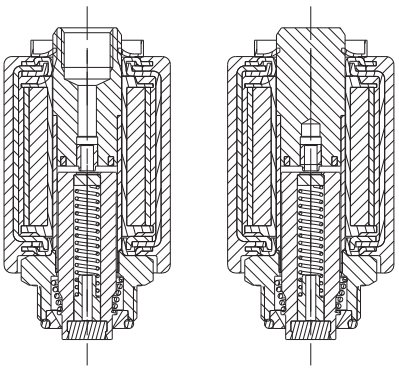
GEM-SOL® | GEM-OG

Operator 3/4" UNEF 2 Way, 3 Way NC, NO

Applicable for GEM-SOL® S32 (GEM-S-4) valves

Technical Data

Function	2 Way, 3 Way NC, NO and Latch
Orifice size	0.8 to 3mm
Pressure range (bars)	See solenoid valve performances
Temperature range	**Fluid :** -10°C to 80°C (no freezing) **Ambient :** -10°C to 50°C
Response time	16 to 36 ms complete cycle
Materials in contact with media	**Operator:** Stainless Steel. AISI 300 & 400 series **Shading ring:** standard - Copper upon request - silver and aluminium Note : Operator for DC is without shading ring and may not be used for AC **Orifice:** Stainless Steel **Spring:** Stainless Steel AISI 300 series
Latch	• Optional
Media	Air, gas, water, fuel, oil etc.
Threads on operator tube	G1/4" male and G1/8" or 1/8" NPT female to connect exhaust, muffler etc.
Operator assembly	By screwing 3/4"-20 UNEF-28 hexagonal 22mm to the valve body and fixing the coil by one G1/4" hexagonal 19mm metal or plastic nut. • Max. tightening torque : 3 N/m
Coil fixing	Any position, can be turned 360° around the operator.
Coil data	See technical GEM-SOL® coil data
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ±10% of nominal



• ADC operators and valves are suitable for use with AC 8W or DC 10W.

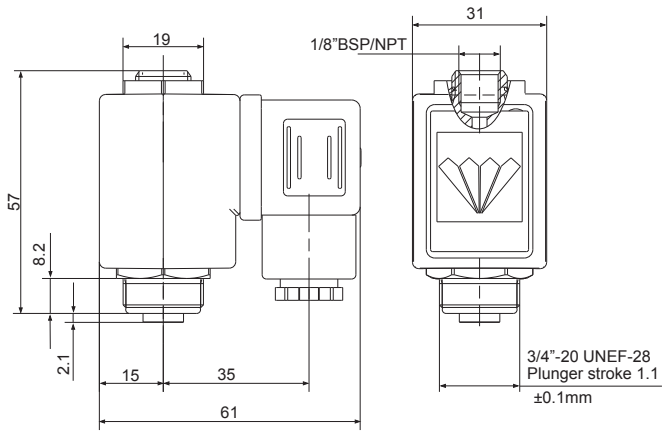
Voltage & Power Consumption

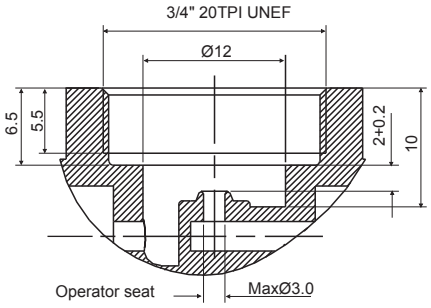
	AC (W)						DC (W)		
	50 Hz			60 Hz					
V	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•	•	•
12	•			•			•	•	•
24	•	•	•	•	•	•	•	•	•
48	•			•			•		
110	•			•	•		•		
120	•			•	•				
220	•	•	•	•			•		
230	•	•		•	•				
240	•			•			•		

• Available options

GEM-SOL® | **GEM-OG** | Operator 3/4" UNEF 2 Way, 3 Way NC, NO

Dimensions





Operator seat

How to Order

2 Way

GEM-OG	-	2W	FUNCTION		SEALS		-	VOLTAGE		POWER		CONNECTOR	
			2W NC	1	NBR	N		W/out coil	0	No coil	0	with	1
			2W NO (1)	2a	FKM	V		6	1	AC8W 50Hz	1	with LED	2
					EPDM	E		12	2	AC8W 60Hz	2	**flying leads coil ***	**4**
								24	3	DC10W	3	with 1/2" Hub	5
								48	4	AC5.5W 50Hz	4	**surge protection with LED ***	**6**
								110	5	AC5.5W 60Hz	5	connector with moulded cable	7
								120	6	AC2.5W 50/60Hz	6	other	**9**
								220	7A	DC5.5W	7		
								230	7	DC3.5W	8		
								240	8				
								Latch/other * (2)	**9**				

3 Way

GEM-OG	-	PORT		FUNCTION		ORIFICE	
		1/8"BSP	10	2W NO	2	0.8	1
		1/8"NPT	11	3W NC	3	1.2	2
				3W NO	4	1.6	3
						2.0	4
						2.4	5
						3.0	6

Example : **GEM-OG-2W1-N-341**

GEM-SOL® GEM-OG Operator, 2W NC, NBR, 24V AC 5.5W 50Hz with connector

Example : **GEM-OG-1034-V-341**

GEM-SOL® GEM-OG Operator, 1/8" BSP, 3W NC, 2.0, FKM, 24V AC 5.5W 50Hz with connector

(1) Supply pressure through base

(2) For specifying Latch type coil, please refer to A3P32 (GEM-A3P)valve - How to Order table.

* Note: When ordering without coil, please define what current and pressure rating is needed (DC, AC or ADC), otherwise an ADC valve will be supplied.

* To order operators manufactured according to your specific requirements, please contact our technical sales department.

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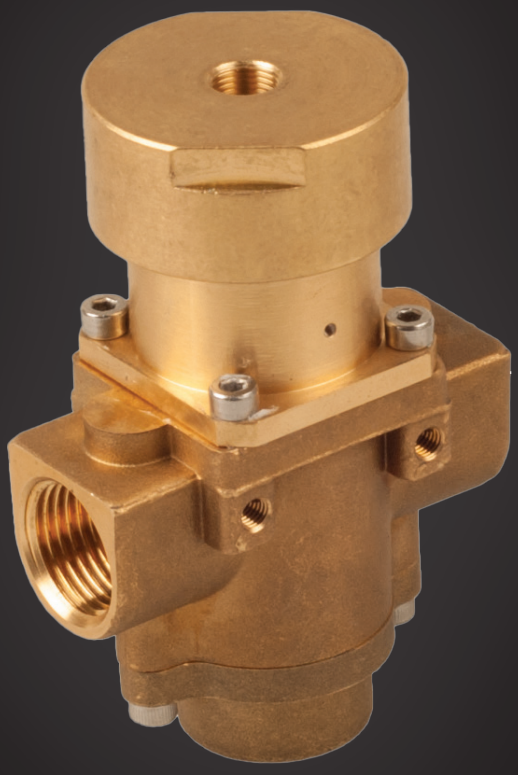


PROCESS VALVES

GLOBE

Tackling climate
change together

Process Valves

Globe | Plastic

GC **Special**

3/4"-2" | 2 Way NC

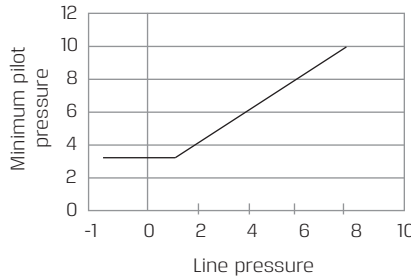
Technical Data

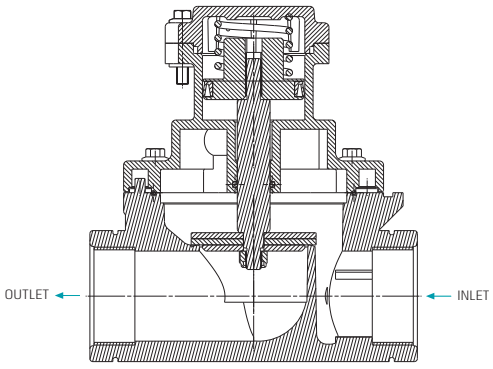
Function	2 Way NC
Ports size	3/4", 1", 1-1/2", 2" BSP & NPT
Pressure range	See table
Temperature range	**Fluid :** -5ºC to 60ºC (no freezing) **Ambient :** -10ºC to 50ºC
Materials in contact with media	**Main Valve:** Plastic (Reinforced Nylon 6) **Diaphragm:** NBR, FKM, EPDM, Polyurethane

2" | 2 Way NC

Pressure (bar) & Flow

Size	Orifice (mm)	Line Pressure
3/4", 1"	27	Vacuum - 10 bar
1-1/2", 2"	55	Vacuum - 10 bar

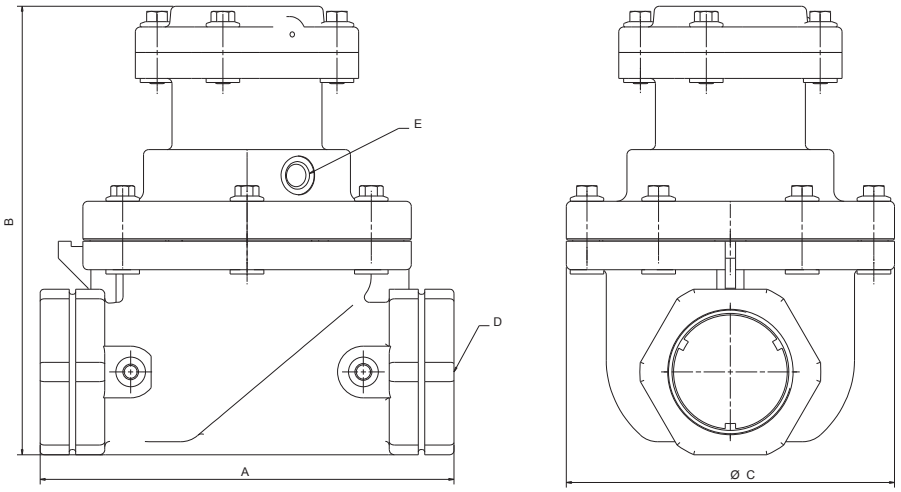




GC | 3/4"-2" | 2 Way NC

Dimensions

Size	A	B	C	D	E
3/4"	110	108	81	3/4"	1/8"BSP/NPT
1"	110	108	81	1"	1/8"BSP/NPT
1-1/2"	160	174	127	1-1/2"	1/8"BSP/NPT
2"	170	185	127	2"	1/8"BSP/NPT



How to Order

GC	-	BODY		TYPE		PORT		-	FUNCTION		SEALS	
		Plastic	4	Globe	1	3/4" BSP	50		2W NC	1	NBR	N
						3/4" NPT	51				FKM	V
						1" BSP	60				EPDM	E
						1" NPT	61				Polyurethane	P
						1-1/2" BSP	70					
						1-1/2" NPT	71					
						2" BSP	80					
						2" NPT	81					

Example : **GC-4160-1N**
GC Plastic, Globe, 1" BSP, 2W NC, NBR seals

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

GC **Special**

General Purpose 3/4"-2" | 3 Way

Technical Data

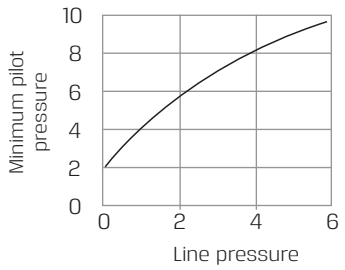
Function	3 Way
Ports size	3/4", 1", 1-1/2", 2" BSP & NPT
Pressure range	See table
Temperature range	**Fluid :** -5°C to 60°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Plastic (Reinforced Nylon 6) **Seal seat:** Polyurethane

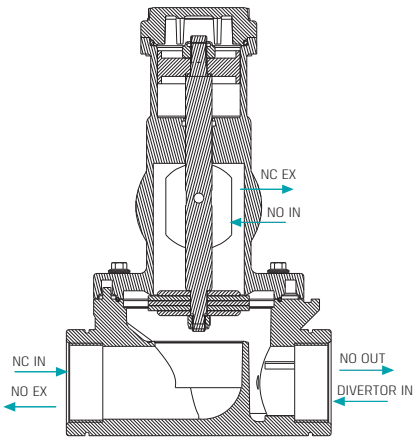
• Use a 5x2 pilot valve to control the valve.

1-1/2" | General purpose

Pressure (bar) & Flow

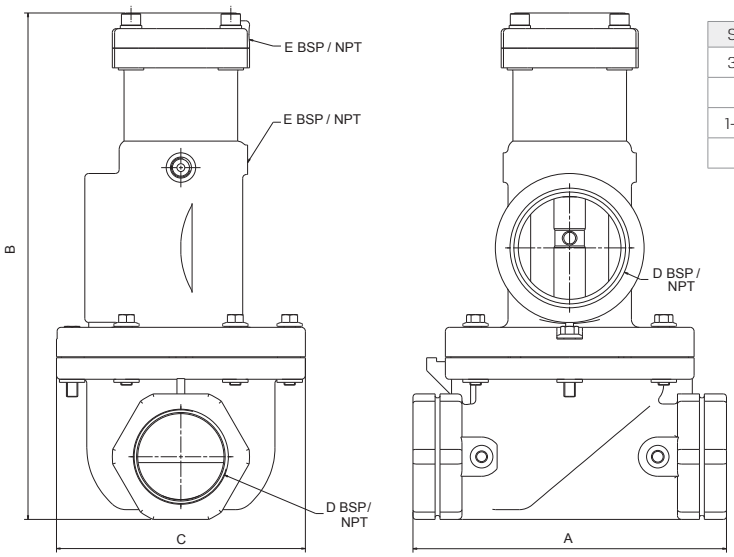
Size	Orifice (mm)	Line Pressure
3/4", 1"	27	Vacuum - 5 bar
1-1/2", 2"	55	Vacuum - 5 bar





GC | General Purpose 3/4"-2" | 3 Way

Dimensions



Size	A	B	C	D	E
3/4"	110	142	81	3/4"	1/8"BSP/NPT
1"	110	142	81	1"	1/8"BSP/NPT
1-1/2"	160	264	126	1-1/2"	1/8"BSP/NPT
2"	170	274	126	2"	1/8"BSP/NPT

How to Order

GC	-	BODY		TYPE		PORT		-	FUNCTION		SEALS	
		Plastic	4	Globe	1	3/4"BSP	50		General purpose	9	Polyurethane	P
						3/4"NPT	51					
						1"BSP	60					
						1"NPT	61					
						1-1/2"BSP	70					
						1-1/2"NPT	71					
						2"BSP	80					
						2"NPT	81					

Example : **GC-4160-9P**

GC Plastic, Globe, 1" BSP, 3 Way, Polyurethane seals

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

Process Valves

Globe | Metal

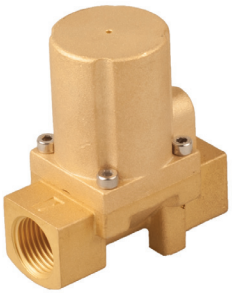
GC **Special**

1/4"-1" | 2 Way NC

Technical Data

Function	2 Way NC
Ports size	1/4", 3/8", 1/2", 3/4", 1" BSP & NPT
Pressure range	See table
Temperature range	**Fluid :** -5°C to 60°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Brass or Stainless Steel AISI 316 **Seals:** NBR/PU, FKM, EPDM and PTFE

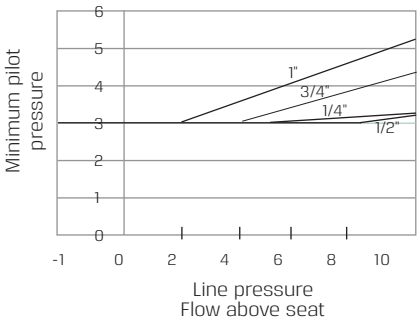
Plastic cover

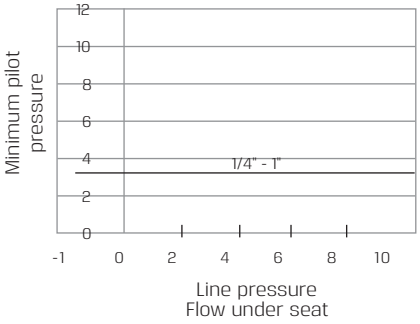


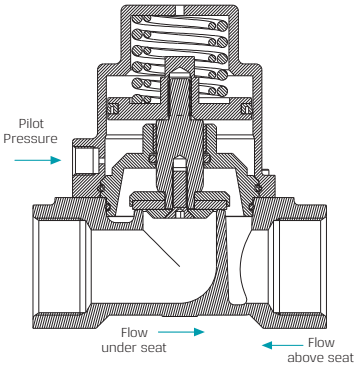
Brass cover

Pressure (bar) & Flow

Size	Orifice (mm)	Line Pressure
1/4"	8	Vacuum - 10 bar
3/8", 1/2"	12	Vacuum - 10 bar
3/4"	20	Vacuum - 10 bar
1"	25	Vacuum - 10 bar



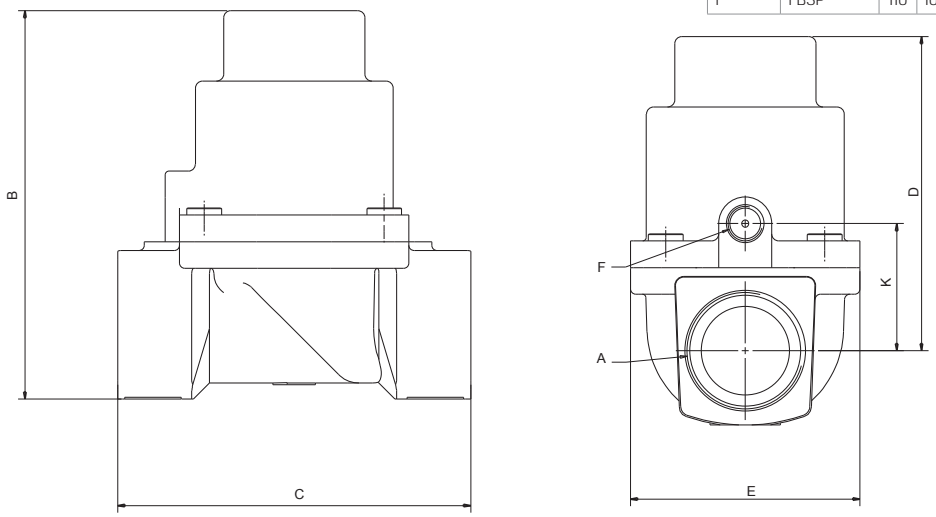




GC | 1/4"-1" | 2 Way NC

Dimensions

Size	A	B	C	D	E	K	F
1/4"	1/4"BSP	62	58	50	32	23	1/8"BSP
3/8",1/2"	3/8",1/2"BSP	78	69	65	38	27	1/8"BSP
3/4"	3/4"BSP	86	89	69	55	34	1/8"BSP
1"	1"BSP	110	100	89	65	36	1/8"BSP



How to Order

GC	-	BODY		TYPE		PORT		-	FUNCTION		SEALS	
		Brass	2	Globe	1	1/4" BSP	20		2W NC	1	NBR/PU	N
		Stainless Steel	3			1/4" NPT	21		2W NC bidirectional	1a	FKM	V
						3/8" BSP	30				EPDM	E
						3/8" NPT	31				PTFE	T
						1/2" BSP	40					
						1/2" NPT	41					
						3/4" BSP	50					
						3/4" NPT	51					
						1" BSP	60					
						1" NPT	61					

Example : **GC-2160-1E**

GC Brass, Globe 1" BSP, 2W NC, EPDM seals

* To order valves manufactured according to your specific requirements, please contact our technical sales department.

Process Valves

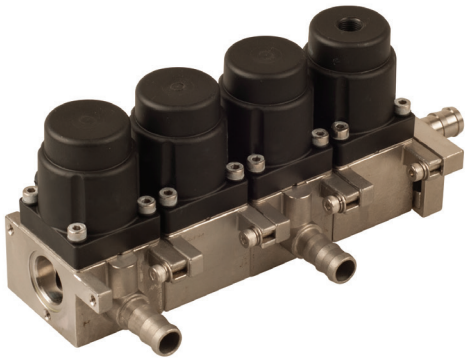
Globe | Manifold

GC-SM Special

Stackable manifold 1/4", 1/2" | 2 Way NC, NO

Technical Data

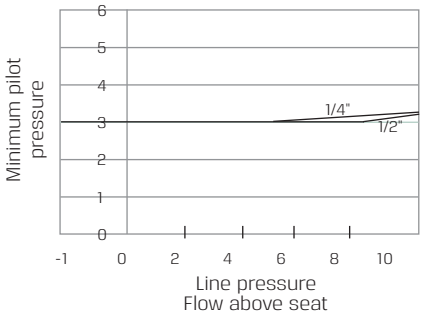
Function	2 Way NC, NO
Ports size	1/4", 1/2" BSP & NPT
Pressure range	See table
Temperature range	**Fluid :** -5°C to 60°C (no freezing) **Ambient :** -10°C to 50°C
Materials in contact with media	**Main Valve:** Brass or Stainless Steel AISI 316 **Seals:** NBR, FKM, EPDM

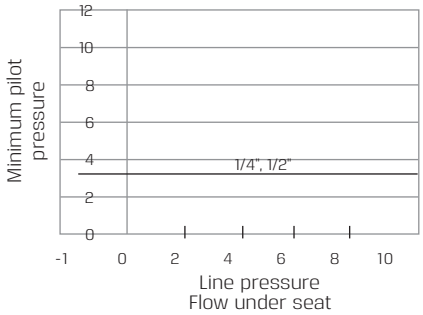


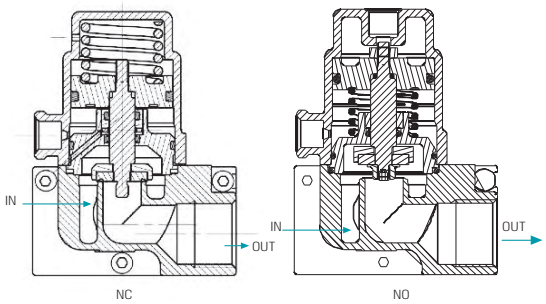
4 stations | Stainless Steel

Pressure (bar) & Flow

Size	Orifice (mm)	Line Pressure
1/4"	8	Vacuum - 10 bar
1/2"	12	Vacuum - 10 bar

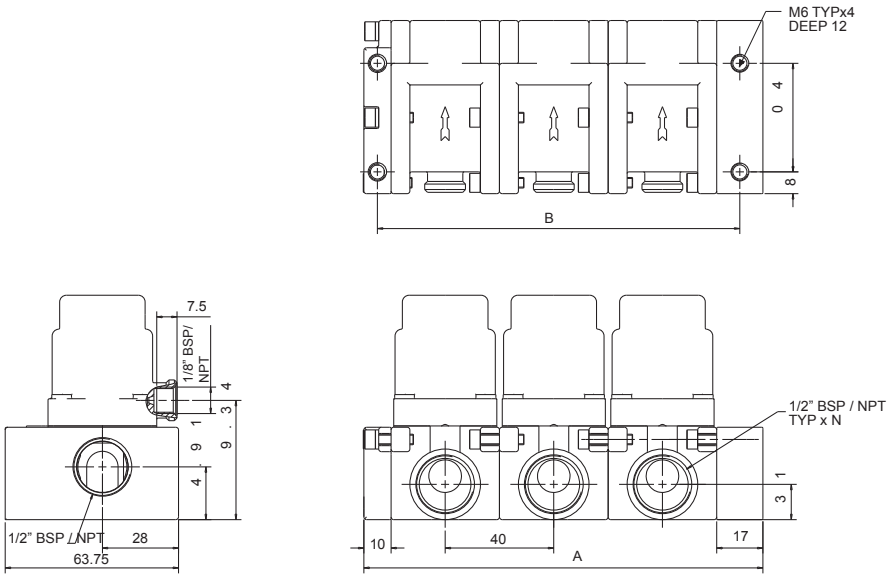






GC-SM | Stackable manifold 1/4", 1/2" | 2 Way NC, NO

Dimensions



A	B
27+40xN	13.5+40xN

N = number of stations

How to Order

GC-SM	-	No. of STATIONS	BODY		PORT		-	FUNCTION		SEALS	
		specify quantity	Brass	2	1/4" BSP (1)	20		2W NC	1	NBR	N
			Stainless Steel	3	1/4" NPT (1)	21		2W NC bidirectional	1a	FKM	V
					1/2" BSP	40		2W NO	2	EPDM	E
					1/2" NPT	41					

Example : **GC-SM-02240-1N**

GC-SM Globe Manifold, 2 station, Brass, 1/2" BSP, 2W NC, NBR seals

(1) Only available in Brass

* To order manifolds manufactured according to your specific requirements, please contact our technical sales department.

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INSTRUMENATION & CONTROL

Tackling climate change together

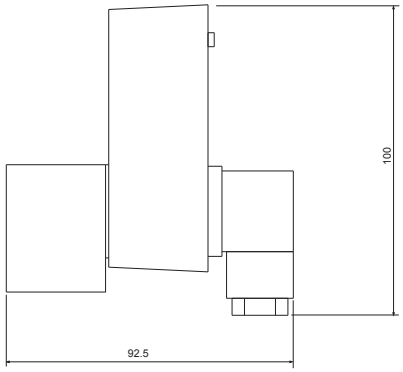
GEM-SOL® | GEM-T&T1

CE

Digital dual & global timer condensers

Technical Data

Valve specifications	See table
Pressure	See table • Higher pressures are available
Digital Dual Condenser Timer (T) Time ranges	Off : 0-99.59 mins On : 0-59 sec
Digital Global Condenser Timer (T1) Time ranges	Off : 0-24 hrs On : 0-24 hrs
Electrical connection	• AMP pins, DIN 46242, • 2 poles + 1 earth
Ambient temperature	-10°C to 50°C
Operation *	• Flash memory to store programme • Automatic sleep mode when no power detected • Can be programmed without connection to power supply *see manual for all options
Weight	64 gr.
Digital Display	Count down **ON** and **OFF** times. Manual override : press keys for 2 seconds.
Time Adjustment	• Press **SET** for 2 seconds • Press **ADJ** to adjust **ON** time • Press **SET** • Press **ADJ** to adjust OFF-time seconds • Press **SET** • Press **ADJ** to adjust **OFF**-time minutes • Press **SET**
Voltage	Voltage and power consumption - see table
Standard / Certification	CE
Standard protection class	IP65 when installed with a connector on coil



Valve

Valve size	GEM-SOL® Valve type	Orifice (mm)	Kv(l/min)
1/8"	I32 (GEM-I)	3	3.8
1/4"	I32 (GEM-I)	3	3.8
3/8"	S32 (GEM-S)	8	16
1/2"	S32 (GEM-S)	12	35
3/4"	S32 (GEM-S)	25	136

Voltage & Power Consumption

V	AC (W) 50/60 Hz	DC (W)
6		
12		
24	•	
48	•	
110	•	
120	•	
220		
230	•	
240	•	

• Available options

How to Order

GEM-T
GEM-T1

PORT		VOLTAGE		CONNECTOR	
w/out valve	00	w/out coil	0	without	0
1/8" BSP	10	24V AC	3	with	1
1/8" NPT	11	48V AC	4	with LED	2
1/4" BSP	20	110V AC	5		
1/4" NPT	21	120V AC	6		
3/8" BSP	30	220V AC	7A		
3/8" NPT	31	230V AC	7		
1/2" BSP	40	240V AC	8		
1/2" NPT	41	other	9		
3/4" BSP	50				
3/4" NPT	51				

Example : **GEM-T-20-51**

GEM-SOL® GEM-T 1/4" BSP, 110V AC coil with connector
T : Dual Timer
T1 : Global Timer

* To order timers manufactured according to your specific requirements, please contact our technical sales department.

BACCARA®
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PNEUMATIC VALVES

GENERAL PURPOSE

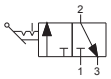
3 Port 1/8" Pilot Valves

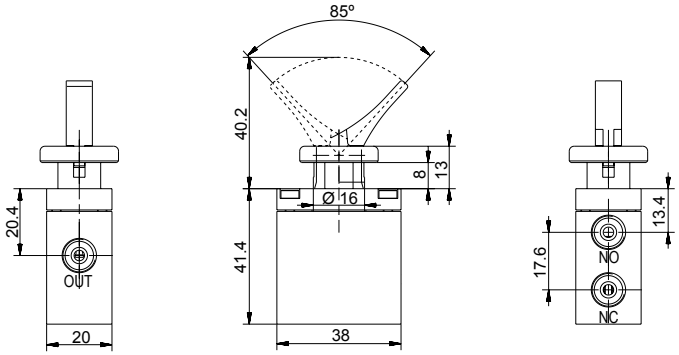
- Available in NC or NO option
- Port size : 1/8" BSP

Technical Data

Material	Brass
Fluid	Air / Inert gas * *For other fluids, please consult with our technical sales department
Operation pressure	NC : 10 bar NO : 7 bar
Ambient temperature	-5° to 55° C
Lubrication	Not required (use turbine oil class ISO VG32 if lubricated)
Port size	1/8" BSP
Pilot pressure	Air-Spring : 2 - 10 bar

Lever

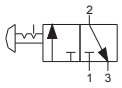


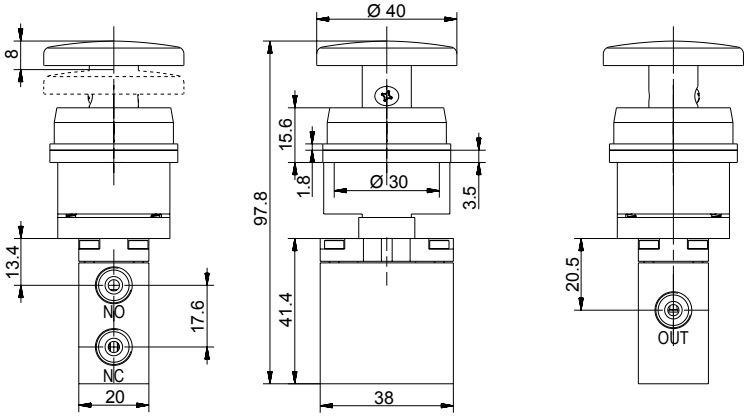


How to Order

33-13-B	-	FUNCTION
		NC 1
		NO 2

Emergency lock Push-Button





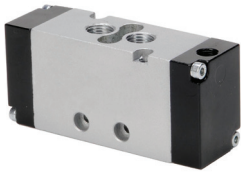
How to Order

33-111-B-E.S	-	FUNCTION
		NC 1
		NO 2

BC 1/4" Body Ported Valves

- 5 port valves - mechanical, air and solenoid
- 3 port (only Sol-Spring)
- Port size : 1/4" BSP
- Can be used as an independent valve or installed on a manifold.

Mechanically Operated



Air Operated

Solenoid Operated

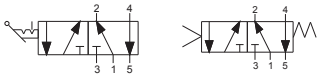
Manifold

Technical Data

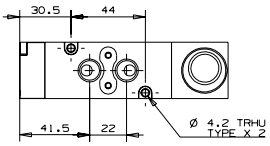
Fluid	Air / Inert gas
Operation pressure	1.5 to 10 bar
Ambient temperature	-5° to 55° C (option for FKM seals) up to 150° C
Lubrication	Not required (use turbine oil class ISO VG32 if lubricated)
Port size	1/4" BSP
Flow rate (Air)	1,100 L/min (at 5.5 bar)

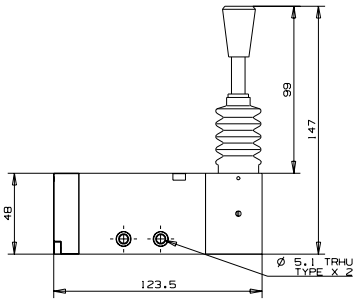
BC | Mechanically Operated

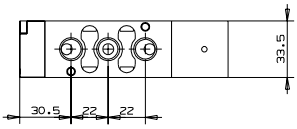
BCM5 | Lever Protec



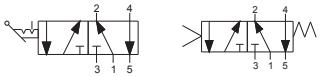
Stable Spring Return



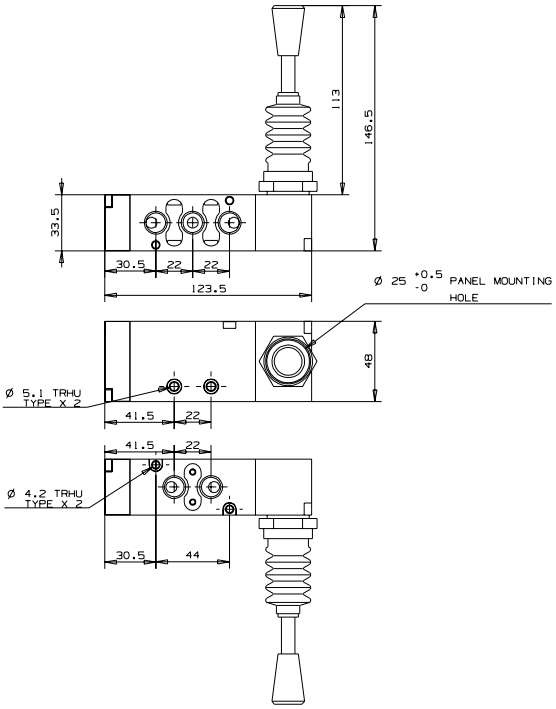




BCM5-PM | Lever Protec Panel Mounting



Stable Spring Return

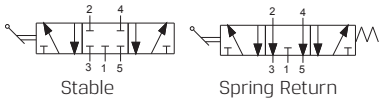


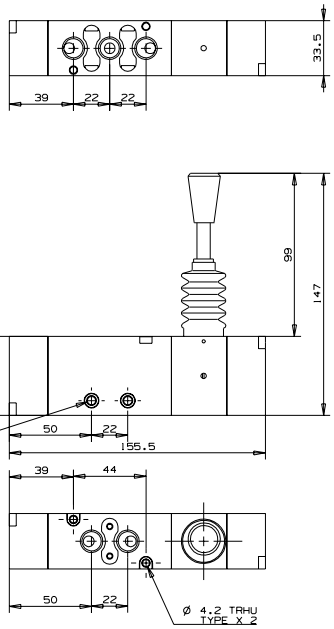
How to Order

BCM5	-	MODEL		-	ACTUATOR TYPE	
		w/out panel mounting	Nil		Stable	D
		with panel mounting	PM		Spring Return	S

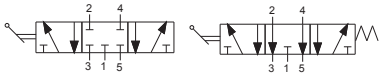
BC | Mechanically Operated

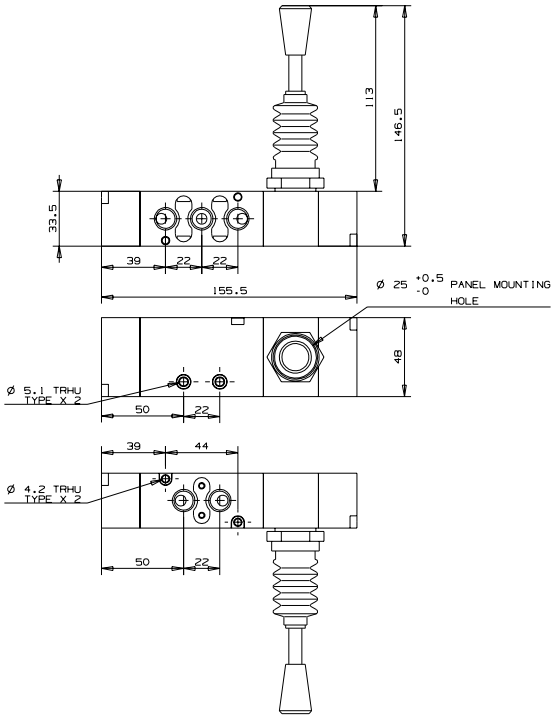
BCM5 | 3 Position Closed & Open Center Lever Protec





BCM5-PM | 3 Position Closed & Open Center Lever Protec Panel Mounting





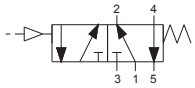
How to Order

BCM5	-	MODEL		-	FUNCTION		-	ACTUATOR TYPE	
		w/out panel mounting (1)	Nil		Closed Center	P		Stable	D
		with panel mounting	PM		Exhaust Center	U		Spring Return	S
					Pressure Center	Y			

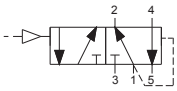
(1) Can be installed on a manifold (body ported type)

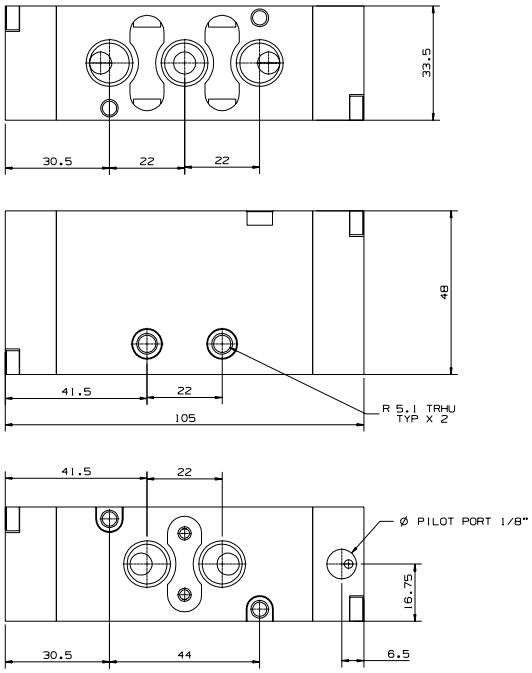
BC | Air Operated

BCA5-S | Air-Spring

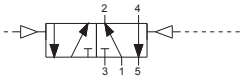


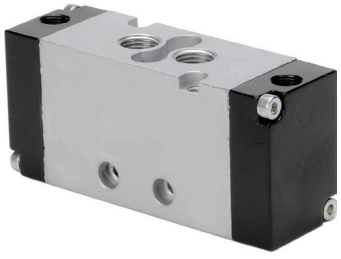
BCA5-DF | Air-Differential

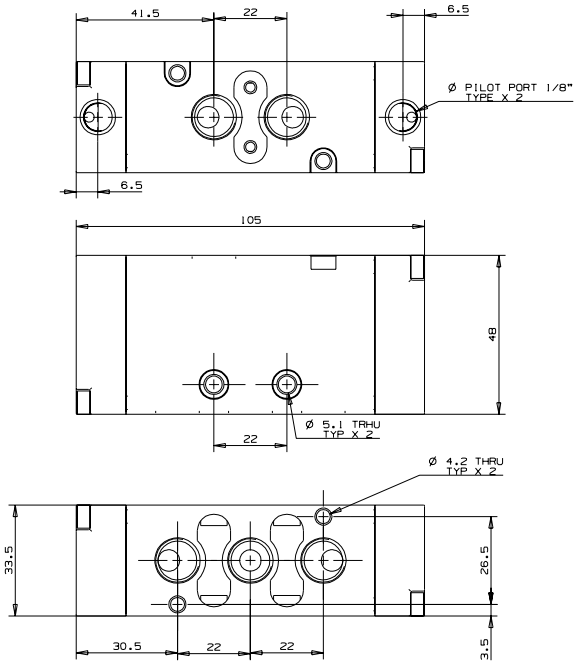




BDA5-D | Air-Air





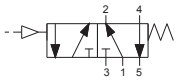


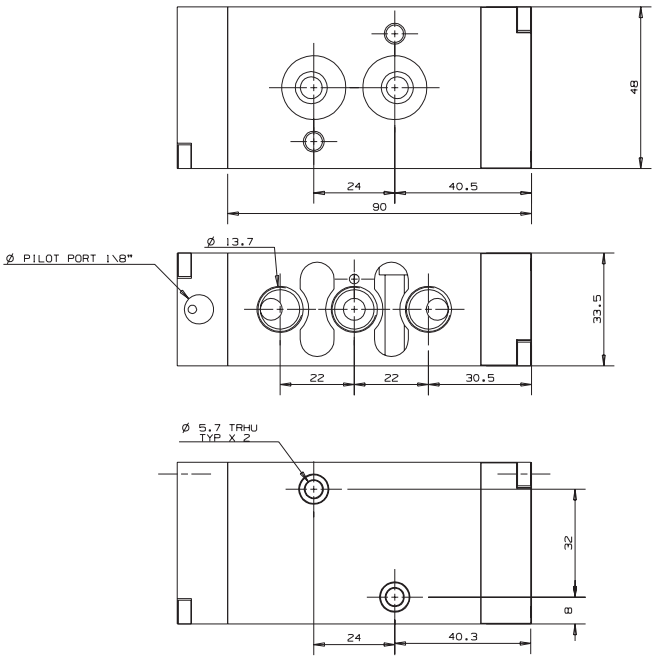
How to Order

BCA5	-	TYPE	
		Air-Spring	S
		Air-Dif	DF
		Air-Air	D

BC | Air Operated

BCA-N | NAMUR type Air-Spring

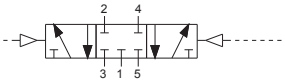




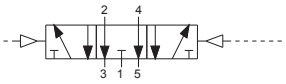
How to Order

BCA	-	N	-	S

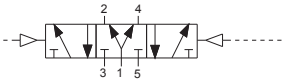
BCA5-P | 3 Position Closed Center Air-Air

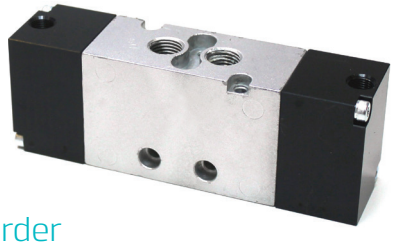


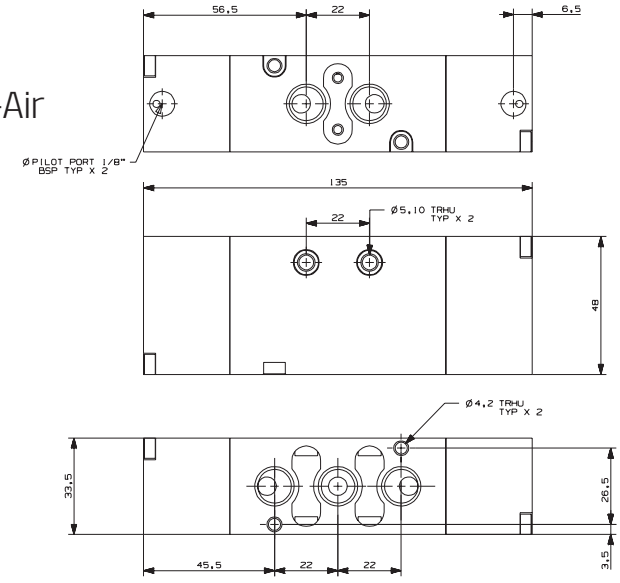
BCA5-U | 3 Position Exhaust Center Air-Air



BCA5-Y | 3 Position Pressure Center Air-Air





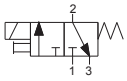


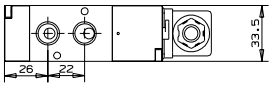
How to Order

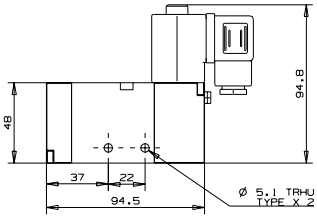
BCA5	-	FUNCTION	
		Closed Center	P
		Exhaust Center	U
		Pressure Center	Y

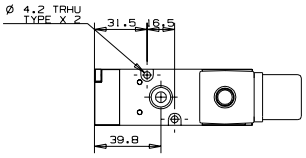
BC | Solenoid Operated

BCS3 | Sol-Spring







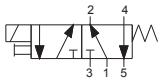


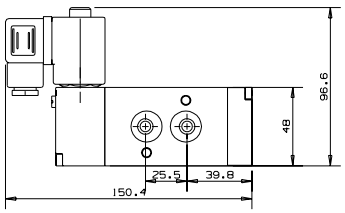
How to Order

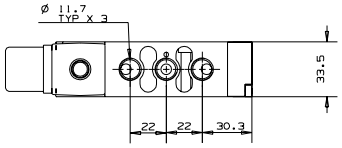
BCS3	-	FUNCTION		-	MANUAL OVERRIDE		-	COIL VOLTAGE		-	POWER		-	CONNECTOR	
		NC	1		None	0		without	0		none	0		without	0
		NO	2		Plastic	1		6	1		AC 8W50Hz	1		standard	1
					Brass slot	2(1)		12	2		AC 8W60Hz	2		with LED	2
					non-locking St.st knob	3(1)		24	3		DC 10W	3		with LED + surge protection	3
					locking St.st knob	4(1)		48	4					with 1/2" hub	4
								110	5						
								120	6						
								230	7						
								240	8						
								other	9						

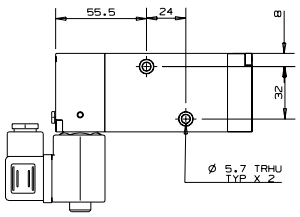
(1) Special order

BCS-N | NAMUR type Sol-Spring









How to Order

BCS	-	N	-	MANUAL OVERRIDE		-	COIL VOLTAGE		-	POWER		-	CONNECTOR	
				None	0		without	0		none	0		without	0
				Plastic	1		6	1		AC 8W50Hz	1		standard	1
				Brass slot	2(1)		12	2		AC 8W60Hz	2		with LED	2
				non-locking St.st knob	3(1)		24	3		DC 10W	3		with LED + surge protection	3
				locking St.st knob	4(1)		48	4					with 1/2" hub	4
							110	5						
							120	6						
							230	7						
							240	8						
							other	9						

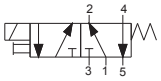
(1) Special order

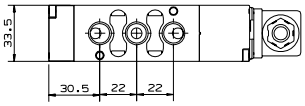
PNEUMATIC VALVES | General Purpose

BC Series | 1/4" Body Ported Valves

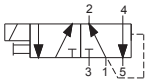
BC | Solenoid Operated

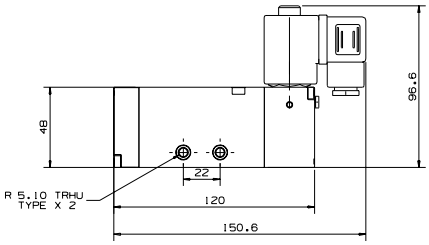
BCS5-S | Sol-Spring Return

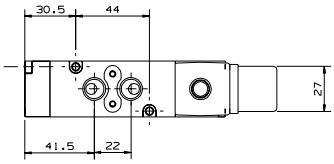




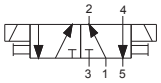
BCS5-DF | Sol-Differential

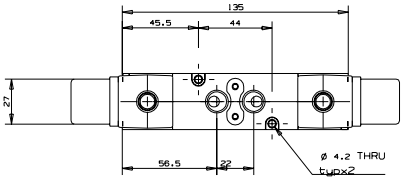


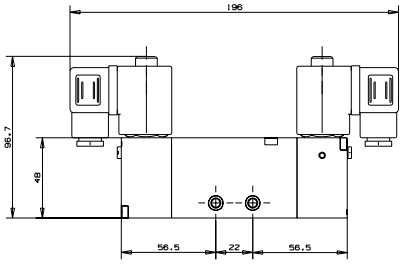


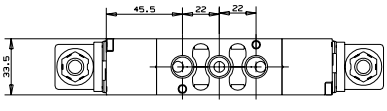


BCS5-D | Sol-Sol









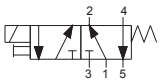
How to Order

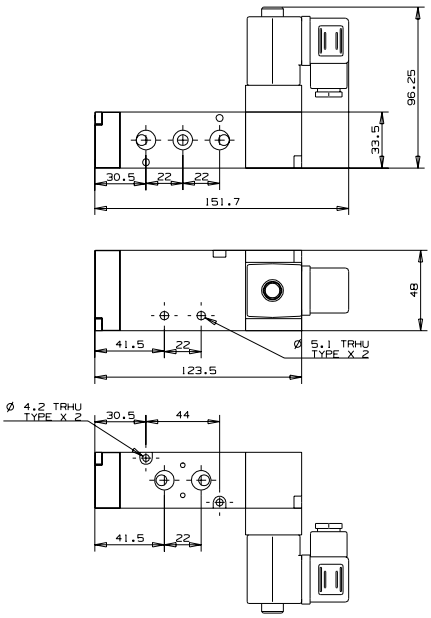
BCS5	-	TYPE		-	MANUAL OVERRIDE		-	COIL VOLTAGE		-	POWER		-	CONNECTOR	
		Sol-Spring	S		None	0		without	0		none	0		without	0
		Sol-Dif	DF		Plastic	1		6	1		AC 8W50Hz	1		standard	1
		Sol-Sol	D		Brass slot	2(1)		12	2		AC 8W60Hz	2		with LED	2
					non-locking St.st knob	3(1)		24	3		DC 10W	3		with LED + surge protection	3
					locking St.st knob	4(1)		48	4					with 1/2" hub	4
								110	5						
								120	6						
								230	7						
								240	8						
								other	9						

(1) Special order

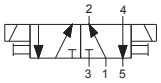
BC | Solenoid Operated

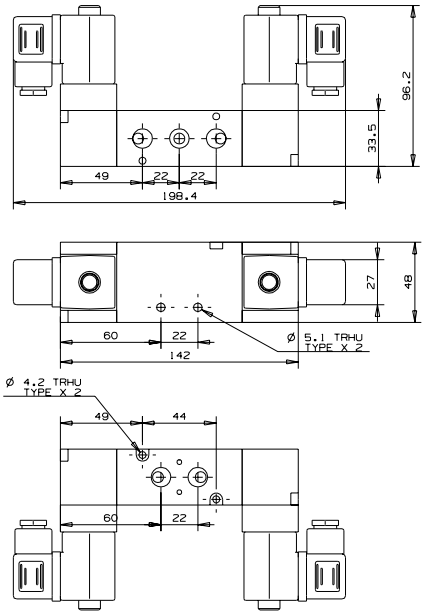
BCS5-90S | Coil position 90° Sol-Spring





BCS5-90D | Coil position 90° Sol-Sol





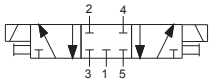
How to Order

BCS5	-	90□	-	MANUAL OVERRIDE	-	COIL VOLTAGE	-	POWER	-	CONNECTOR
		Sol-Spring S		None 0		without 0		none 0		without 0
		Sol-Sol D		Plastic 1		6 1		AC 8W50Hz 1		standard 1
				Brass slot 2(1)		12 2		AC 8W60Hz 2		with LED 2
				non-locking St.st knob 3(1)		24 3		DC 10W 3		with LED + surge protection 3
				locking St.st knob 4(1)		48 4				with 1/2" hub 4
						110 5				
						120 6				
						230 7				
						240 8				
						other 9				

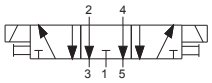
(1) Special order

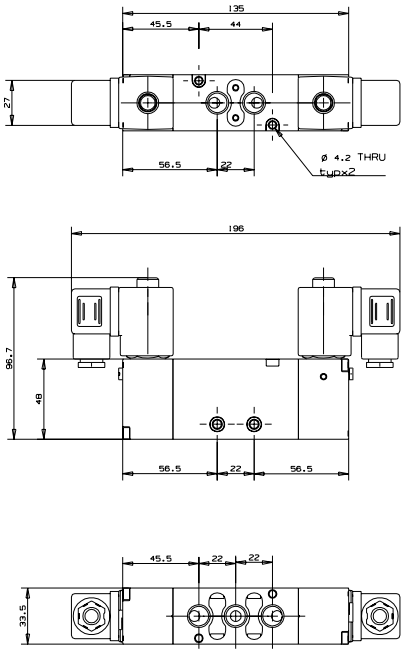
BC | Solenoid Operated

BCS53-P | 3 Position Closed Center Sol-Sol

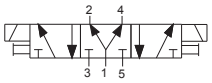


BCS53-U | 3 Position Exhaust Center Sol-Sol

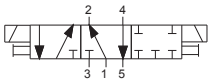


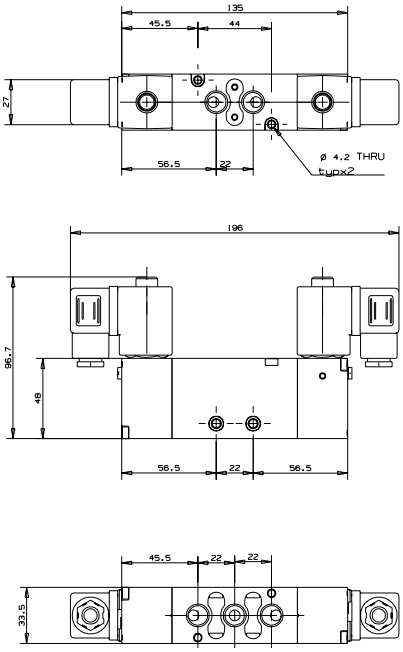


BCS53-Y | 3 Position Pressure Center Sol-Sol



BCS53-A | 3 Position Shelf Control Sol-Sol





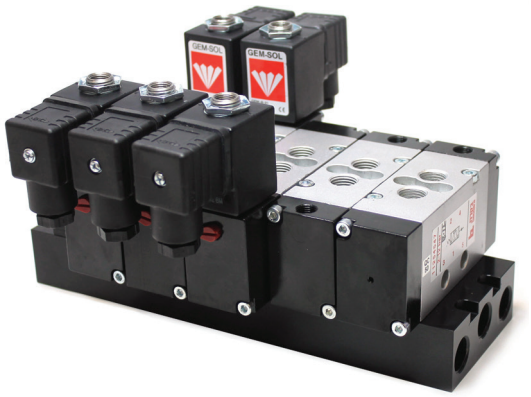
How to Order

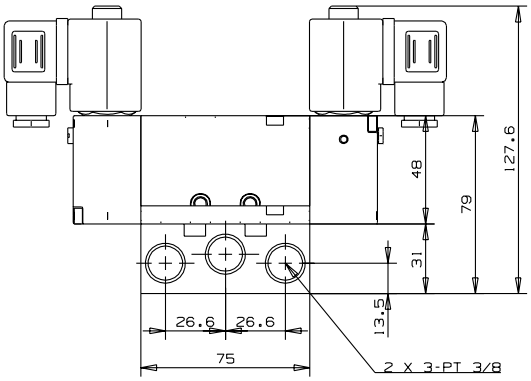
BCS53	-	FUNCTION		-	MANUAL OVERRIDE		-	COIL VOLTAGE		-	POWER		-	CONNECTOR	
		Closed Center	P		None	0		without	0		none	0		without	0
		Exhaust Center	U		Plastic	1		6	1		AC 8W50Hz	1		standard	1
		Pressure Center	Y		Brass slot	2(1)		12	2		AC 8W60Hz	2		with LED	2
		Shelf Control	A		non-locking St.st knob	3(1)		24	3		DC 10W	3		with LED + surge protection	3
					locking St.st knob	4(1)		48	4					with 1/2" hub	4
								110	5						
								120	6						
								230	7						
								240	8						
								other	9						

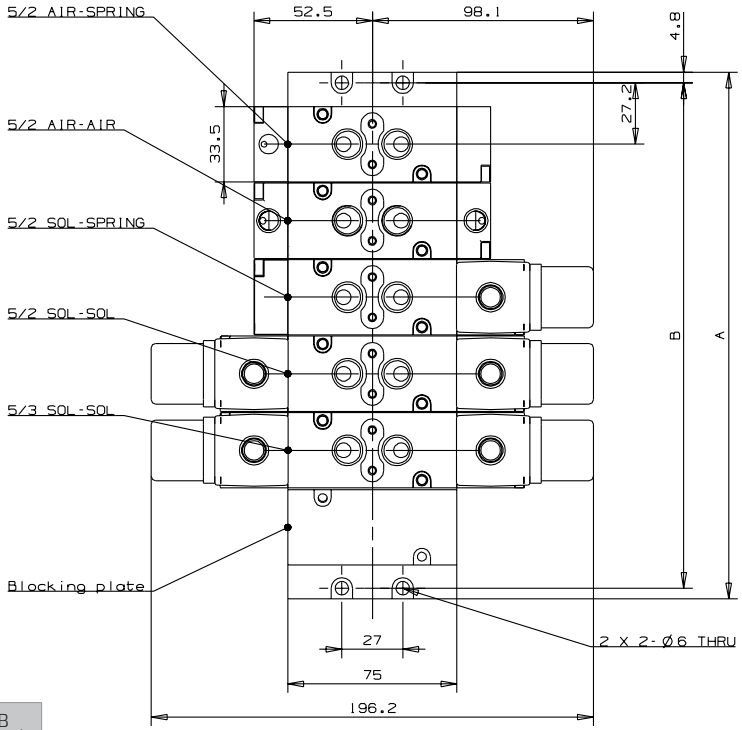
(1) Special order

BC | Manifold

BC-BP | Manifold







How to Order

BC	-	BP	-	No. OF STATIONS
				2
				3
				4
				6

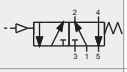
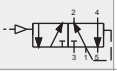
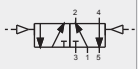
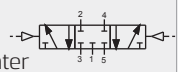
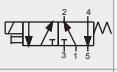
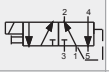
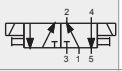
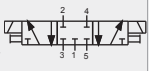
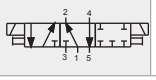
No. of stations	A (mm)	B (mm)
2	128	118.5
3	162	152.5
4	196	186.5
6	264	254.5

BC | Manifold

Manifold Specification Sheet

Manifold Model : BC-BP-☐

Mark required stations with an "x"

VALVE DESCRIPTION	* STATIONS					
	1	2	3	4	5	6
Air-Spring 						
Air-Dif 						
Air-Air 						
Air-Air 3 Position Closed Center 						
Air-Air 3 Position Exhaust Center 						
Air-Air 3 Position Pressure Center 						
Sol-Spring 						
Sol-Dif 						
Sol - Sol 						
Sol - Sol 3 Position Closed Center 						
Sol-Sol 3 Position Exhaust Center 						
Sol-Sol 3 Position Pressure Center 						
Sol-Sol 3 Position Shelf Control 						

* Station No.1 starts from the left side of the manifold

BACCARA®
AUTOMATION & CONTROL

PNEUMATIC VALVES

BRASS HEAVY DUTY

PE VALVES

Tackling climate
change together

PE | Mechanically Operated

- Heavy duty brass valves, mechanically operated
- 3/2, 5/2, 5/3
- Port size : 1/4" & 1/2" BSP & NPT

Application

- Suitable for use in aggressive environments such as mining, cement manufacturing and flour milling industries.

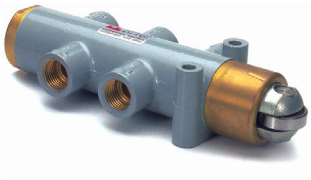
Technical Data

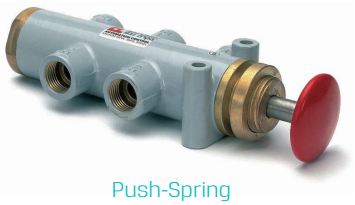
Fluid	Air / Inert gas / Water
Operation pressure	-1 to 10 bar
Ambient temperature	-5° to 55° C (option for FKM seals) up to 150° C
Lubrication	Not required (use turbine oil class ISO VG32 if lubricated)
Port size	1/4" & 1/2" BSP or NPT
Flow rate (Air)	1/4" port size = 1,100 L/min (at 5.5 bar) 1/2" port size = 3,500 L/min (at 5.5 bar)


Lever


Lever Protec

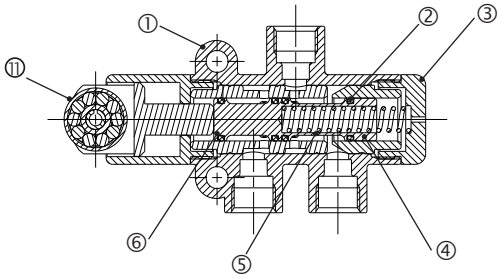

Foot Return Spring


Roller-Spring

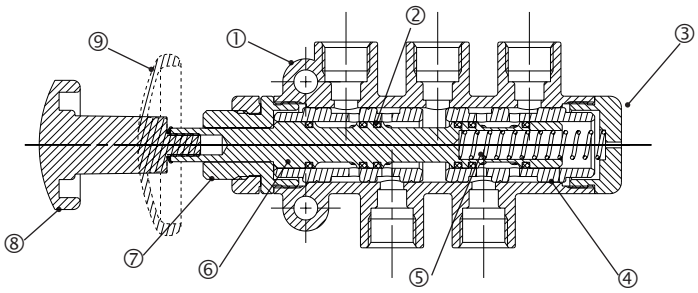

Push-Spring

Construction

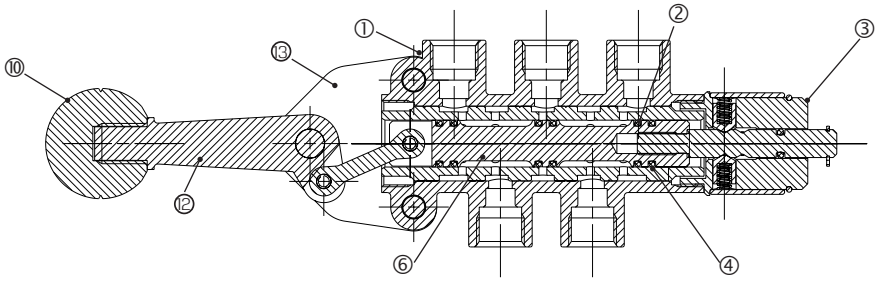
3 port Roller-Spring valve



5 port Push-Spring valve



5 port, 3 Position Stable Lever valve



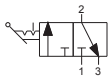
Component Parts

No.	Description	Material	
1	Body	Brass *	
2	"O" ring	NBR or FKM	
3	End cover	Brass	
4	Sleeve	Brass	
5	Spring	-	
6	Spool	Brass	
7	Panel Nut	Brass	
8	Small button 35.8 mm	Color : Green Red Black	Plastic
9	Large button 50.2 mm		
10	Operator knob	Plastic (Black)	
11	Roller	-	
12	Control handle	Mazak	
13	Side plate	Zinc coated steel	

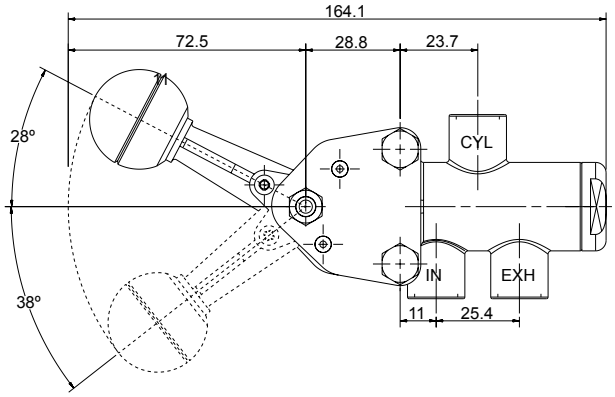
* Painted with grey polyester

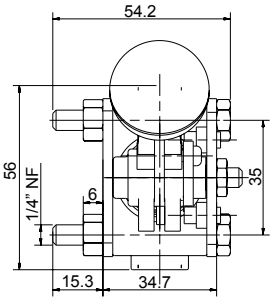
PE | Mechanically Operated

PEM3-L | Stable Lever | 1/4", 1/2" | 3 port

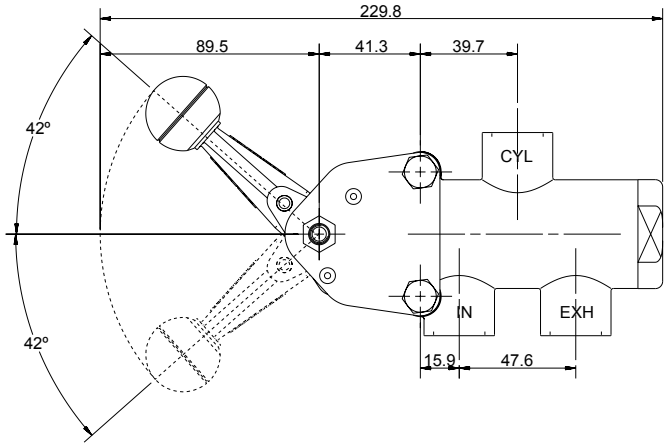


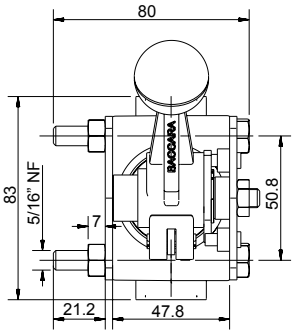
Port size : 1/4"





Port size : 1/2"

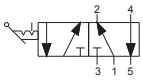




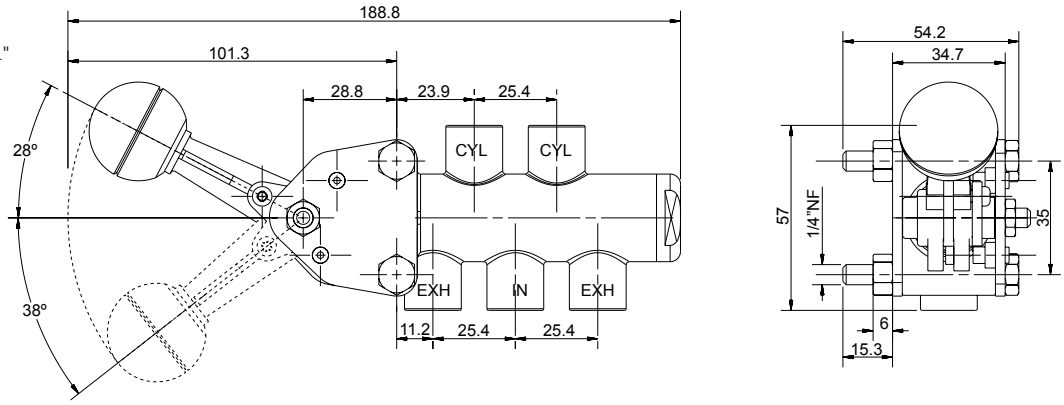
How to Order

PEM3	-	PORT SIZE		-	L	-	SEAL MATERIAL	
		1/4" BSP	0				NBR	N
		1/4" NPT	1				FKM	V
		1/2" BSP	2					
		1/2" NPT	3					

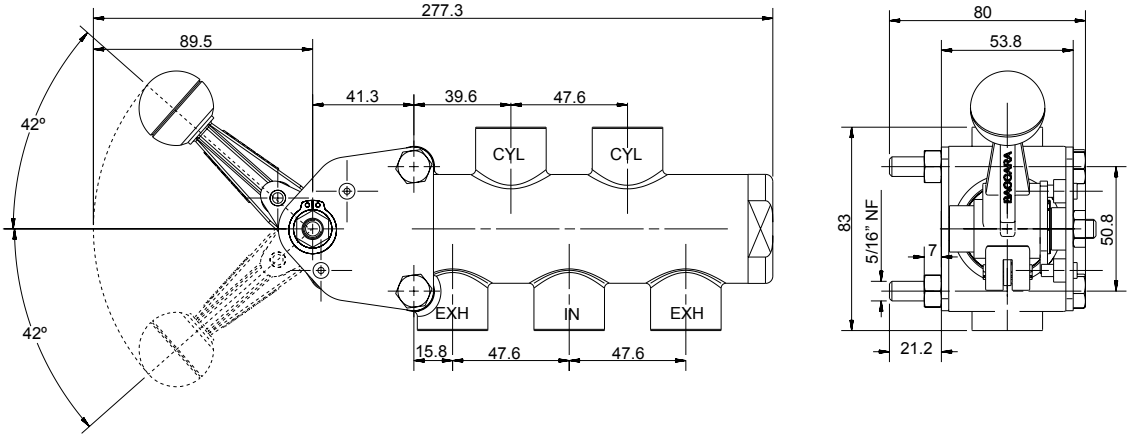
PEM5-L | Stable Lever | 1/4", 1/2" | 5 port



Port size : 1/4"



Port size : 1/2"

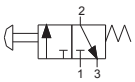


How to Order

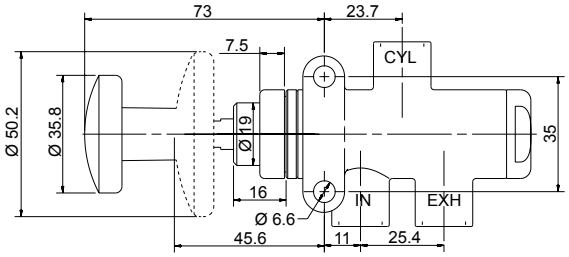
PEM5	-	PORT SIZE		-	L	-	SEAL MATERIAL	
		1/4" BSP	0				NBR	N
		1/4" NPT	1				FKM	V
		1/2" BSP	2					
		1/2" NPT	3					

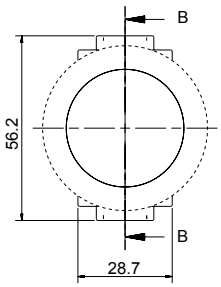
PE | Mechanically Operated

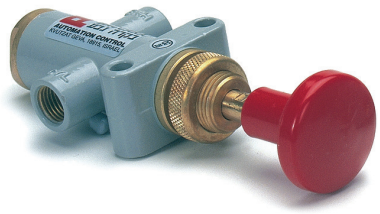
PEM3-PS | Push-Spring | 1/4", 1/2" | 3 port



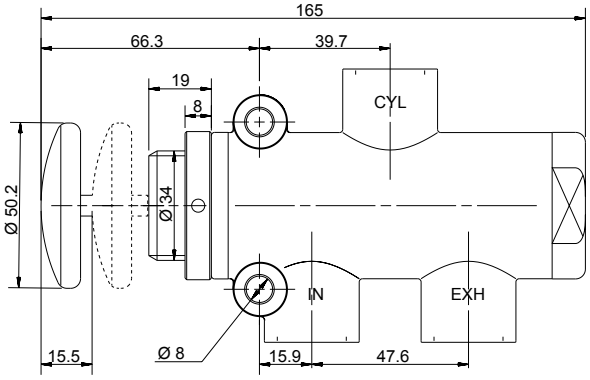
Port size : 1/4"

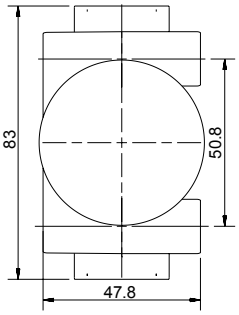






Port size : 1/2"



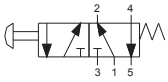


How to Order

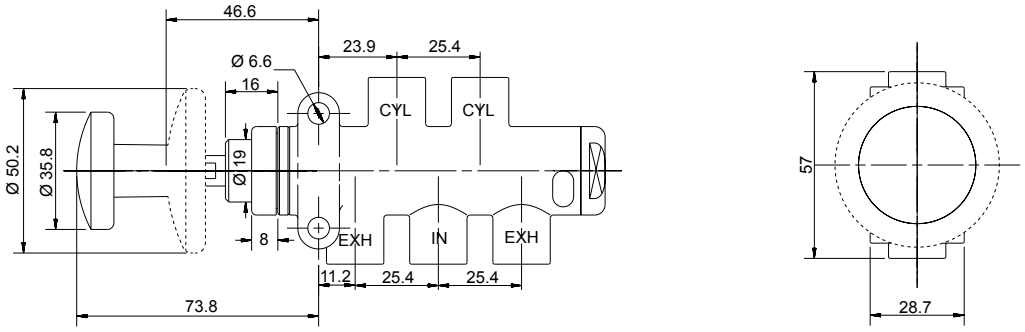
PEM3	-	PORT SIZE		-	PS	-	SEAL MATERIAL		-	BUTTON SIZE		-	COLOR OF BUTTON	
		1/4" BSP	0				NBR	N		35.8	1(1)		Red	R
		1/4" NPT	1				FKM	V		50.2	2		Green	G(2)
		1/2" BSP	2										Black	B(2)
		1/2" NPT	3											

(1) This size is an option for 1/2" valves
(2) Optional

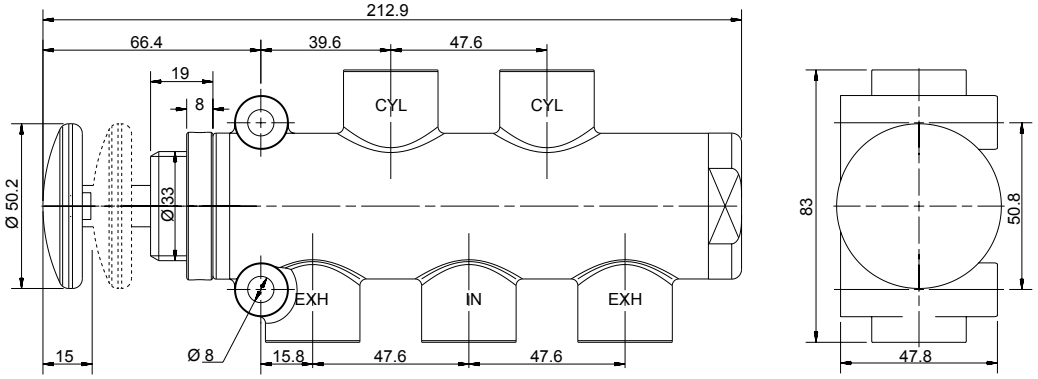
PEM5-PS | Push-Spring | 1/4", 1/2" | 5 port



Port size : 1/4"



Port size : 1/2"



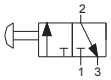
How to Order

PEM5	-	PORT SIZE		-	PS	-	SEAL MATERIAL		-	BUTTON SIZE		-	COLOR OF BUTTON	
		1/4" BSP	0				NBR	N		35.8	1(1)		Red	R
		1/4" NPT	1				FKM	V		50.2	2		Green	G(2)
		1/2" BSP	2										Black	B(2)
		1/2" NPT	3											

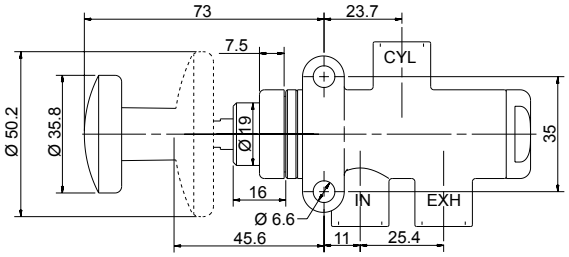
(1) This size is an option for 1/2" valves
(2) Optional

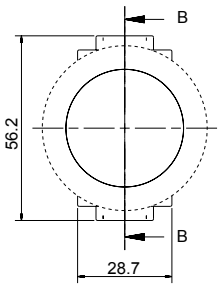
PE | Mechanically Operated

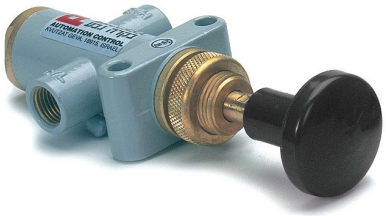
PEM3-PP | Push-Pull | 1/4", 1/2" | 3 port



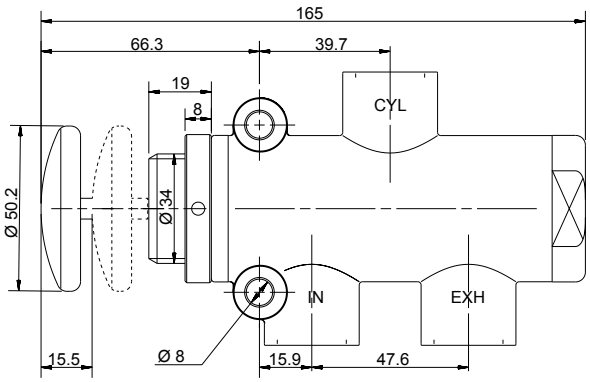
Port size : 1/4"

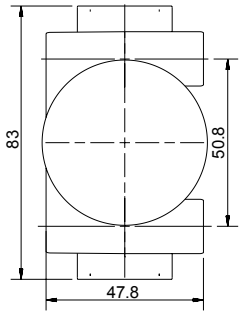






Port size : 1/2"



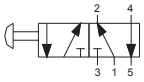


How to Order

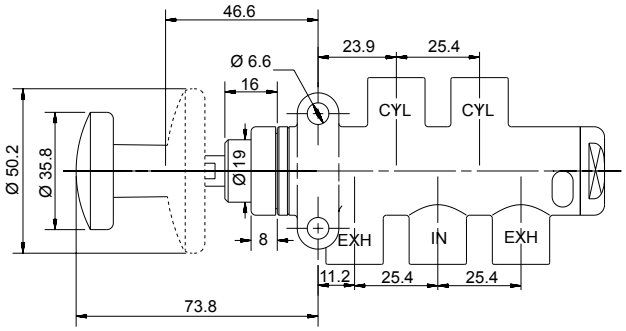
PEM3	-	PORT SIZE		-	PP	-	SEAL MATERIAL		-	BUTTON SIZE		-	COLOR OF BUTTON	
		1/4" BSP	0				NBR	N		35.8	1(1)		Black	B
		1/4" NPT	1				FKM	V		50.2	2		Green	G(2)
		1/2" BSP	2										Red	R(2)
		1/2" NPT	3											

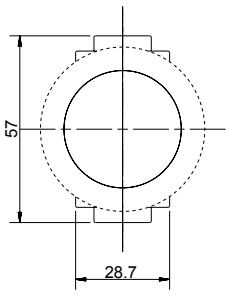
(1) This size is an option for 1/2" valves
(2) Optional

PEM5-PP | Push-Pull | 1/4", 1/2" | 5 port

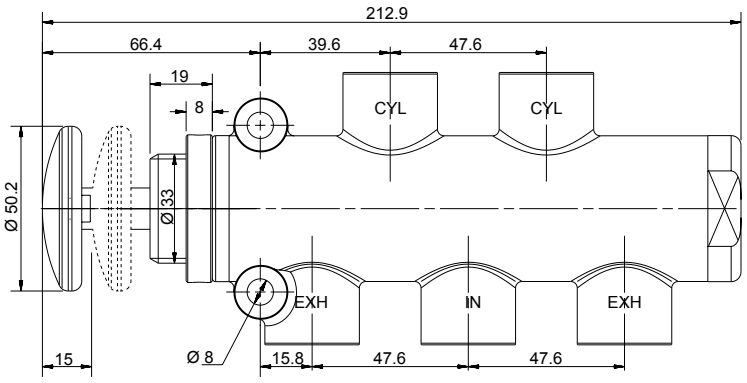


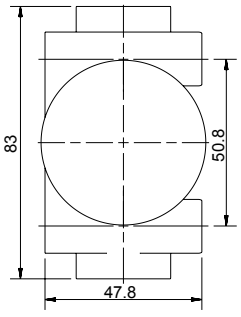
Port size : 1/4"





Port size : 1/2"





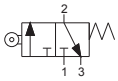
How to Order

PEM5	-	PORT SIZE		-	PP	-	SEAL MATERIAL		-	BUTTON SIZE		-	COLOR OF BUTTON	
		1/4" BSP	0				NBR	N		35.8	1[1]		Black	B
		1/4" NPT	1				FKM	V		50.2	2		Green	G[2]
		1/2" BSP	2										Red	R[2]
		1/2" NPT	3											

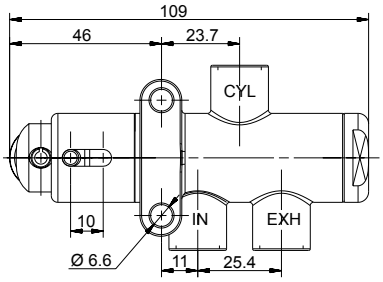
(1) This size is an option for 1/2" valves
(2) Optional

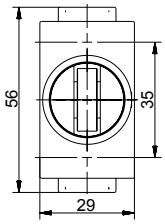
PE | Mechanically Operated

PEM3-RS | Roller-Spring | 1/4", 1/2" | 3 port



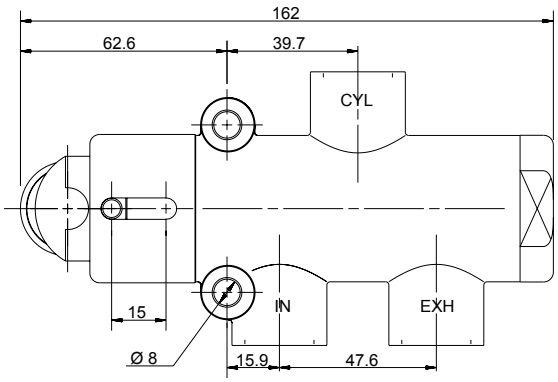
Port size : 1/4"

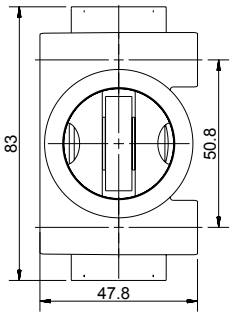




*Roller fixed at 90°

Port size : 1/2"

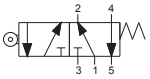




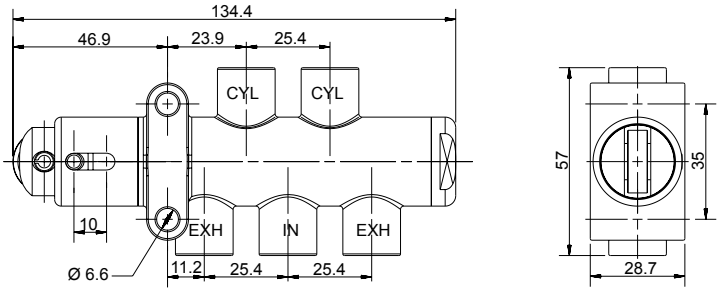
How to Order

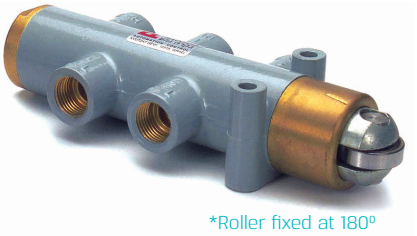
PEM3	-	PORT SIZE		-	RS	-	SEAL MATERIAL		-	ROLLER POSITION	
		1/4" BSP	0				NBR	N		180°	1
		1/4" NPT	1				FKM	V		90°	2
		1/2" BSP	2								
		1/2" NPT	3								

PEM5-RS | Roller-Spring | 1/4", 1/2" | 5 port



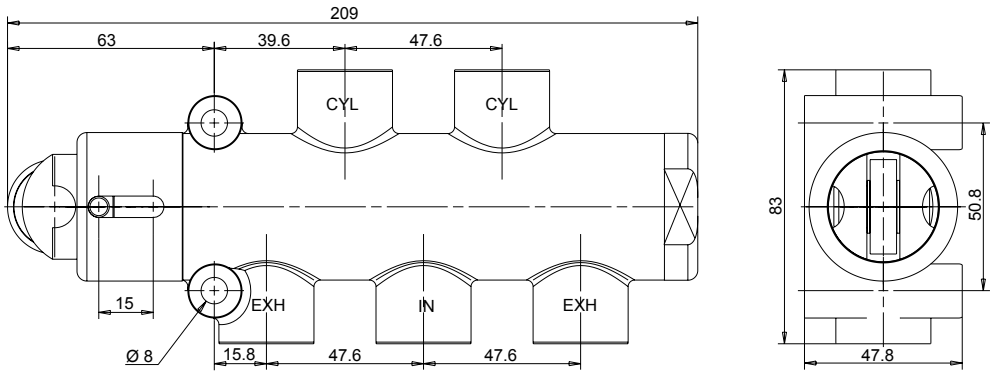
Port size : 1/4"





*Roller fixed at 180º

Port size : 1/2"

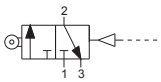


How to Order

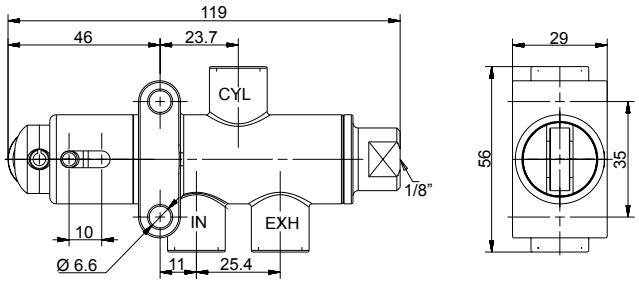
PEM5	-	PORT SIZE		-	RS	-	SEAL MATERIAL		-	ROLLER POSITION	
		1/4" BSP	0				NBR	N		180º	1
		1/4" NPT	1				FKM	V		90º	2
		1/2" BSP	2								
		1/2" NPT	3								

PE | Mechanically Operated

PEM3-RA | Roller-Air | 1/4", 1/2" | 3 port

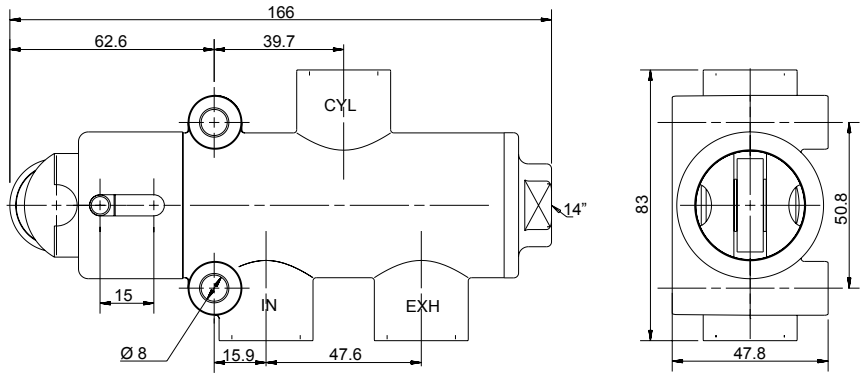


Port size : 1/4"



*Roller fixed at 90º

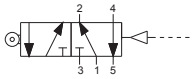
Port size : 1/2"



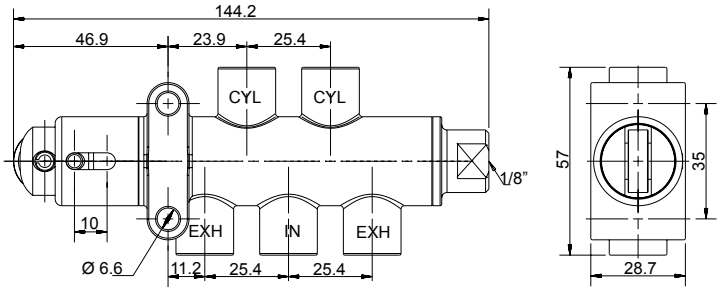
How to Order

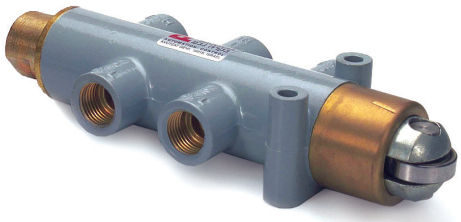
PEM3	-	PORT SIZE		-	RA	-	SEAL MATERIAL		-	ROLLER POSITION	
		1/4" BSP	0				NBR	N		180º	1
		1/4" NPT	1				FKM	V		90º	2
		1/2" BSP	2								
		1/2" NPT	3								

PEM5-RA | Roller-Air | 1/4", 1/2" | 5 port



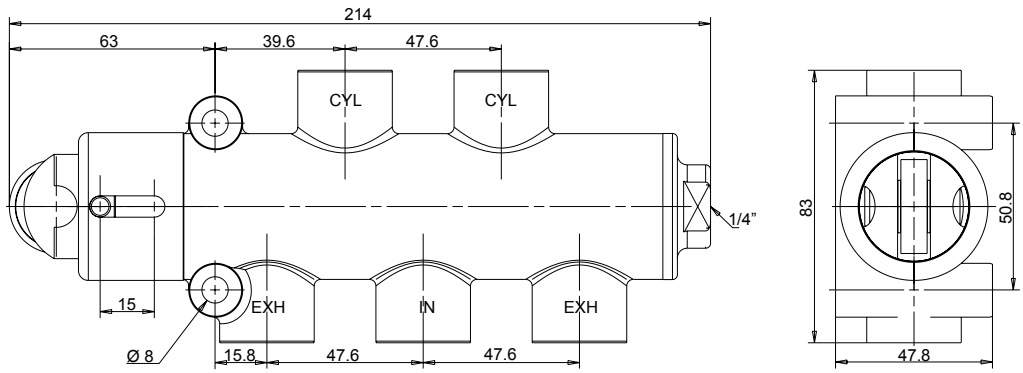
Port size : 1/4"





*Roller fixed at 180º

Port size : 1/2"



How to Order

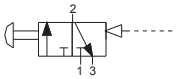
PEM5	-	PORT SIZE		-	RA	-	SEAL MATERIAL		-	ROLLER POSITION	
		1/4" BSP	0				NBR	N		180º	1
		1/4" NPT	1				FKM	V		90º	2
		1/2" BSP	2								
		1/2" NPT	3								

PNEUMATIC VALVES | Brass Heavy Duty

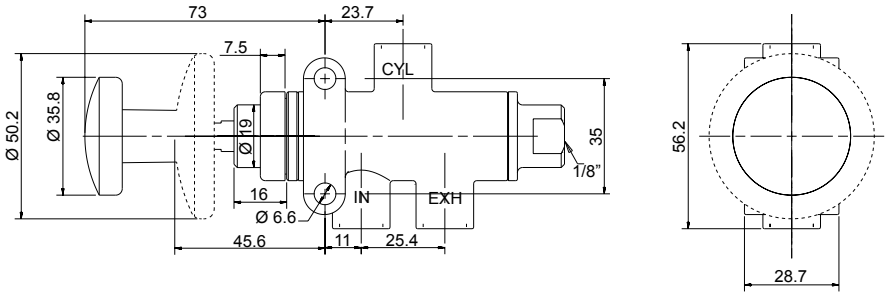
PE Series

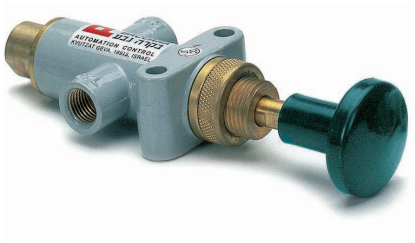
PE | Mechanically Operated

PEM3-PPA | Push-Pull Air | 1/4", 1/2" | 3 port

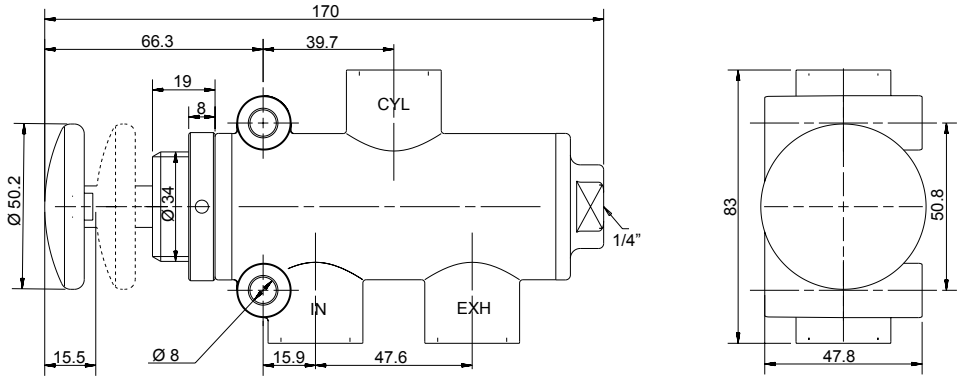


Port size : 1/4"





Port size : 1/2"

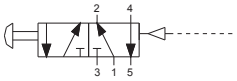


How to Order

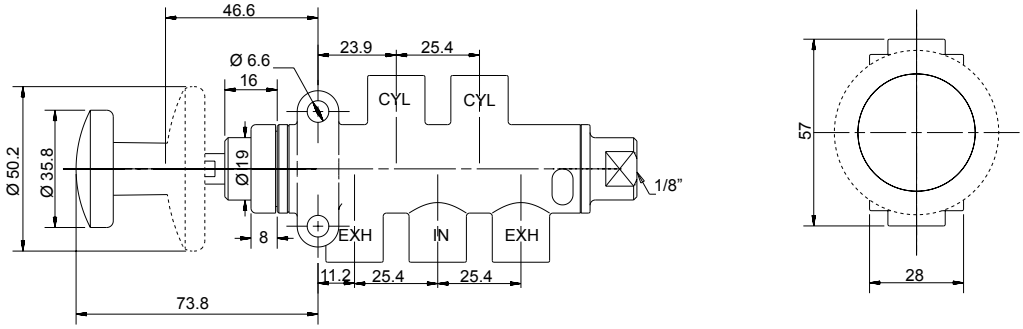
PEM3	-	PORT SIZE		-	PPA	-	SEAL MATERIAL		-	BUTTON SIZE		-	COLOR OF BUTTON	
		1/4" BSP	0				NBR	N		35.8	1(1)		Green	G
		1/4" NPT	1				FKM	V		50.2	2		Black	B(2)
		1/2" BSP	2										Red	R(2)
		1/2" NPT	3											

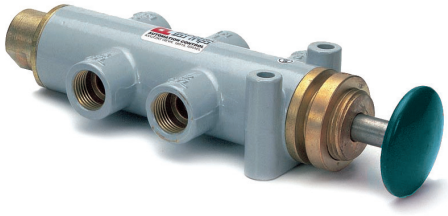
(1) This size is an option for 1/2" valves
(2) Optional

PEM5-PPA | Push-Pull Air | 1/4", 1/2" | 5 port

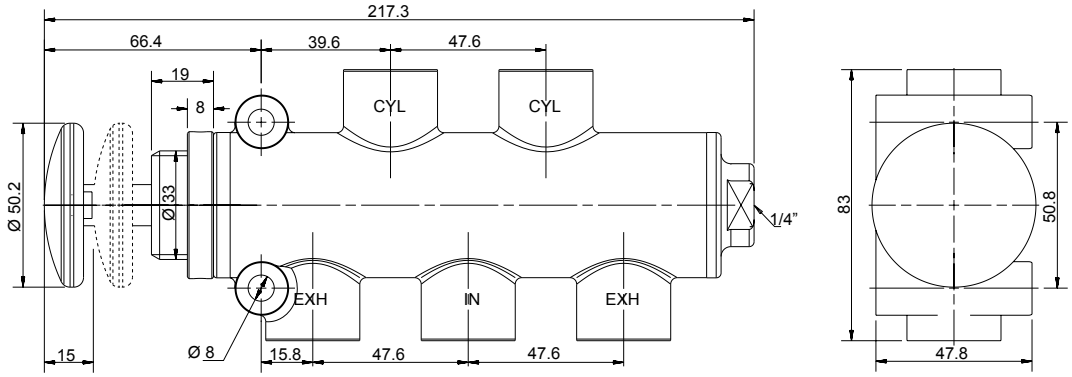


Port size : 1/4"





Port size : 1/2"



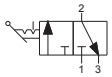
How to Order

PEM5	-	PORT SIZE		-	PPA	-	SEAL MATERIAL		-	BUTTON SIZE		-	COLOR OF BUTTON	
		1/4" BSP	0				NBR	N		35.8	1[1]		Green	G
		1/4" NPT	1				FKM	V		50.2	2		Black	B[2]
		1/2" BSP	2										Red	R[2]
		1/2" NPT	3											

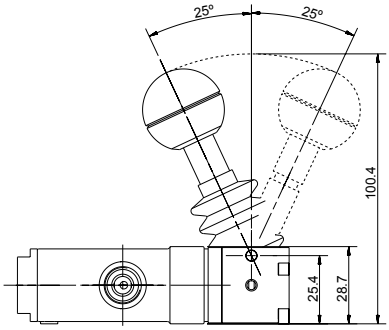
(1) This size is an option for 1/2" valves
(2) Optional

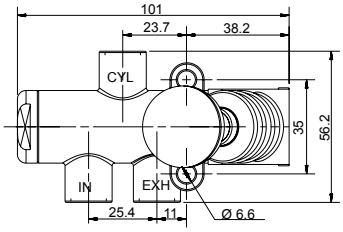
PE | Mechanically Operated

PEM3-L90 | Stable Lever Protec | 1/4", 1/2" | 3 port

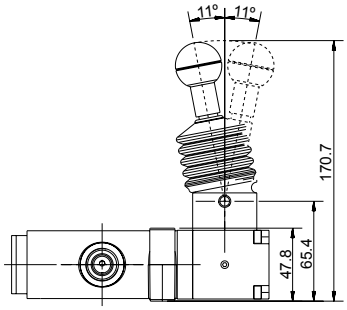


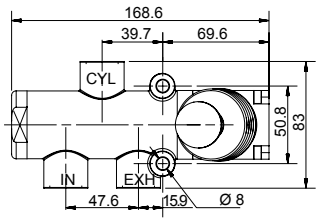
Port size : 1/4"





Port size : 1/2"

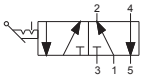




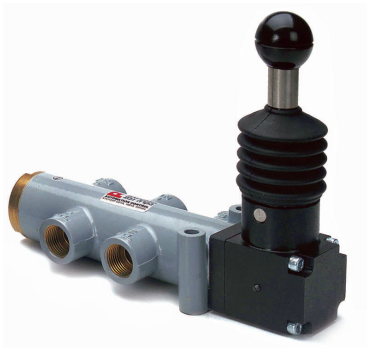
How to Order

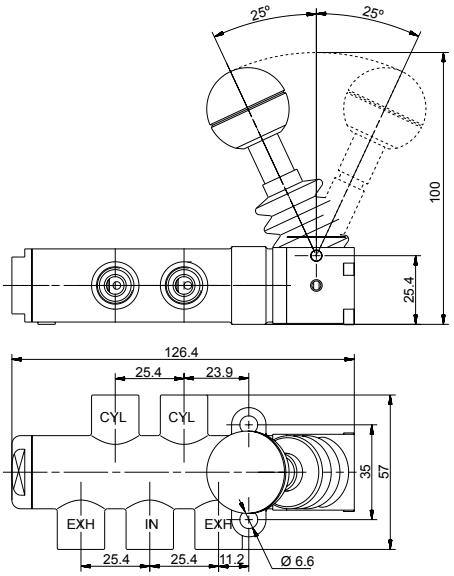
PEM3	-	PORT SIZE		-	L90	-	SEAL MATERIAL	
		1/4" BSP	0				NBR	N
		1/4" NPT	1				FKM	V
		1/2" BSP	2					
		1/2" NPT	3					

PEM5-L90 | Stable Lever Protec | 1/4", 1/2" | 5 port

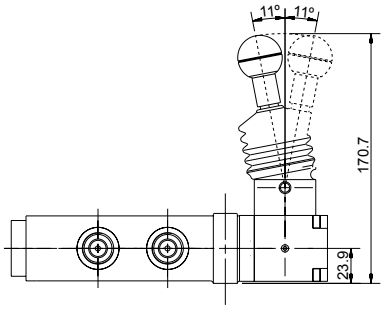


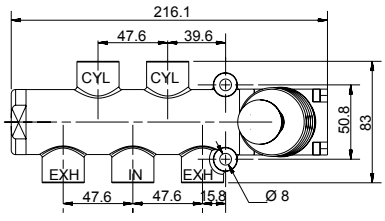
Port size : 1/4"





Port size : 1/2"



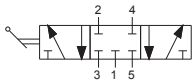


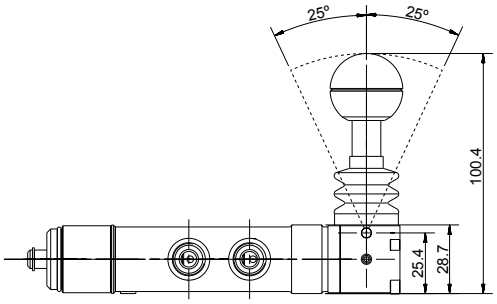
How to Order

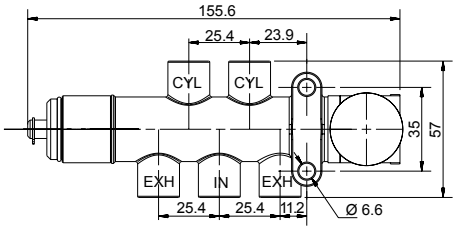
PEM5	-	PORT SIZE		-	L90	-	SEAL MATERIAL	
		1/4" BSP	0				NBR	N
		1/4" NPT	1				FKM	V
		1/2" BSP	2					
		1/2" NPT	3					

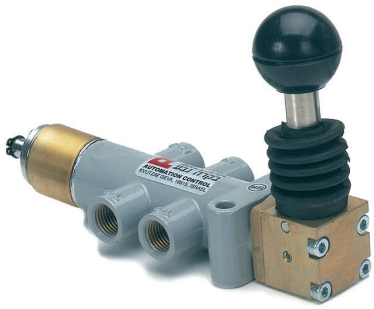
PE | Mechanically Operated

PEM5-D90-M | 3 Position Closed Center-Lever Protec
Stable | 1/4" | 5 port

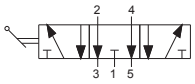


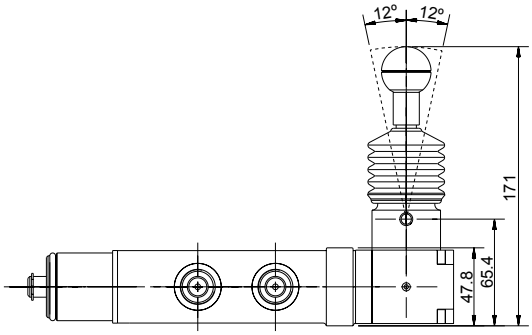


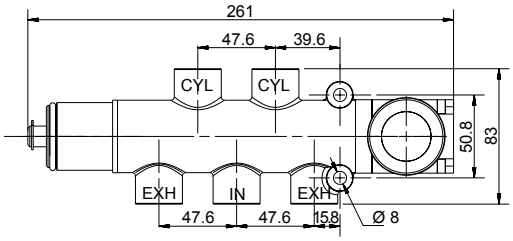




PEM5-D90-W | 3 Position Exhaust Center-Lever Protec
Stable | 1/2" | 5 port



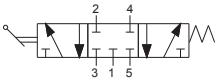


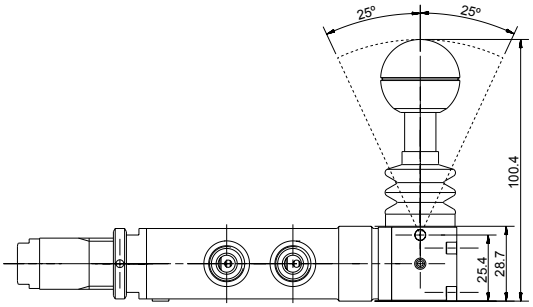


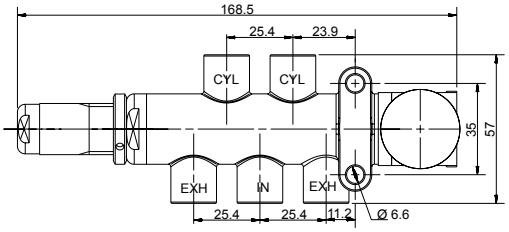
How to Order

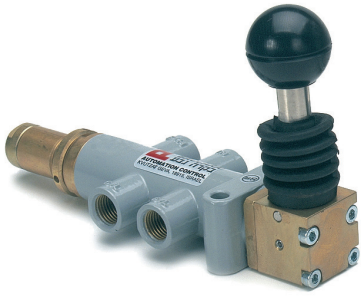
PEM5	-	PORT SIZE		-	FUNCTION		-	D90	-	SEAL MATERIAL	
		1/4" BSP	0		Closed Center	M				NBR	N
		1/4" NPT	1							FKM	V
		1/2" BSP	2		Exhaust Center	W					
		1/2" NPT	3								

PEM5-S90-P | 3 Position Closed Center-Lever Protec
Return to Center | 1/4" | 5 port

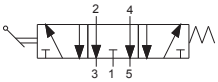


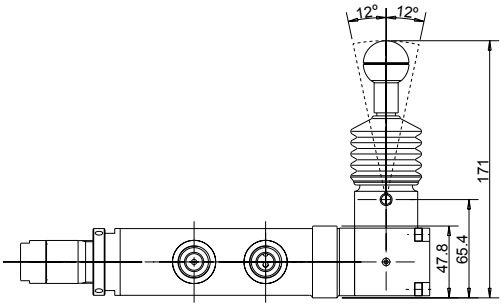


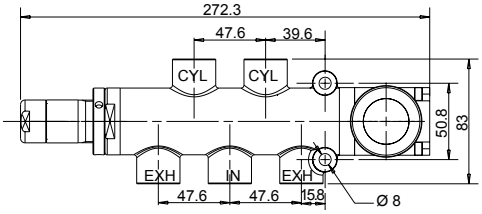




PEM5-S90-U | 3 Position Exhaust Center-Lever Protec
Return to Center | 1/2" | 5 port





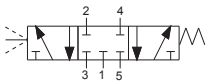


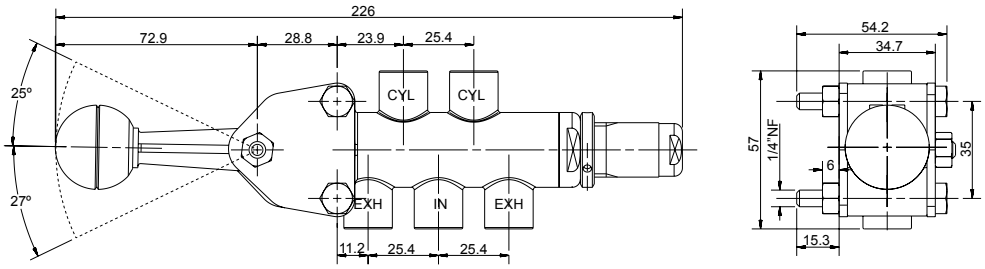
How to Order

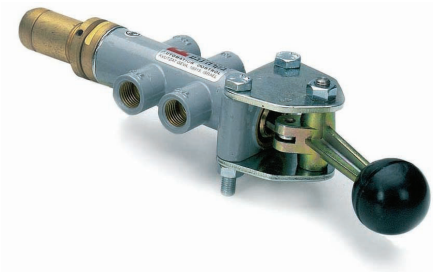
PEM5	-	PORT SIZE		-	FUNCTION		-	S90	-	SEAL MATERIAL	
		1/4" BSP	0		Closed Center	P				NBR	N
		1/4" NPT	1							FKM	V
		1/2" BSP	2		Exhaust Center	U					
		1/2" NPT	3								

PE | Mechanically Operated

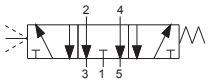
PEM5-S-P | 3 Position Closed Center-Lever
Return to Center | 1/4" | 5 port

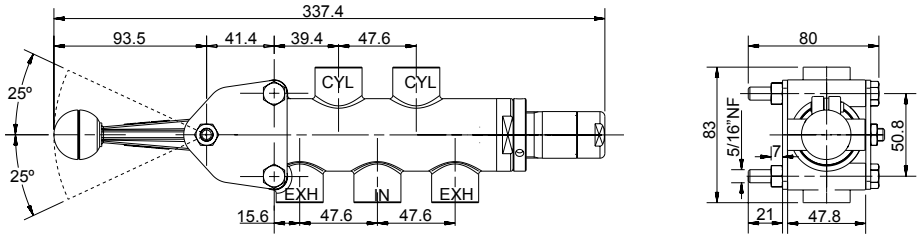






PEM5-S-U | 3 Position Exhaust Center-Lever
Return to Center | 1/2" | 5 port

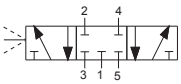


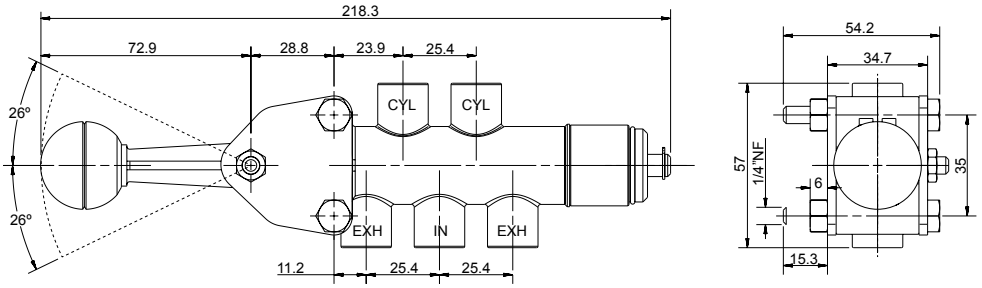


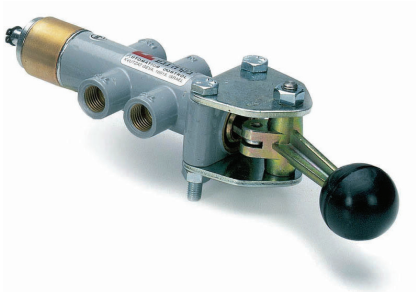
How to Order

PEM5	-	PORT SIZE		-	FUNCTION		-	S	-	SEAL MATERIAL	
		1/4" BSP	0		Closed Center	P				NBR	N
		1/4" NPT	1							FKM	V
		1/2" BSP	2		Exhaust Center	U					
		1/2" NPT	3								

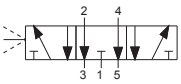
PEM5-D-M | 3 Position Closed Center-Lever
Stable | 1/4" | 5 port

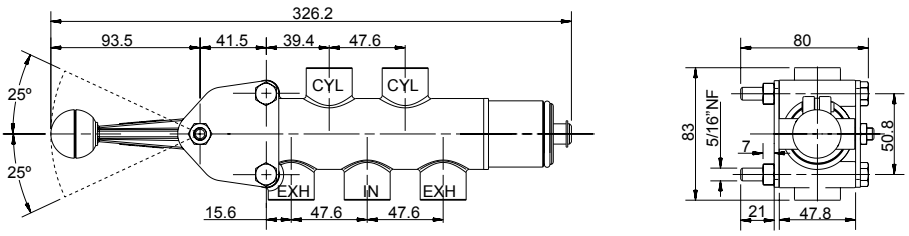






PEM5-D-W | 3 Position Exhaust Center-Lever
Stable | 1/2" | 5 port



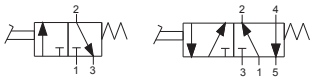


How to Order

PEM5	-	PORT SIZE		-	FUNCTION		-	D	-	SEAL MATERIAL	
		1/4" BSP	0		Closed Center	M				NBR	N
		1/4" NPT	1							FKM	V
		1/2" BSP	2		Exhaust Center	W					
		1/2" NPT	3								

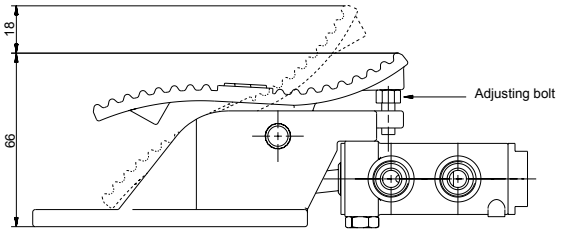
PE | Mechanically Operated

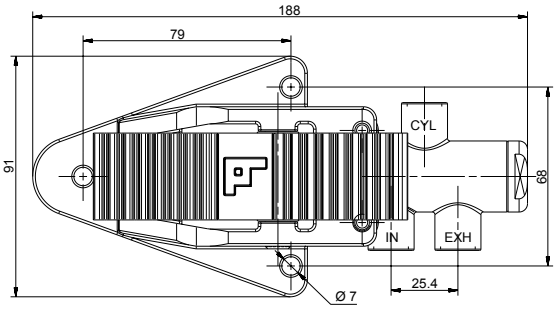
PEM5-PDS | Foot Return Spring | 1/4" | 3 & 5 port



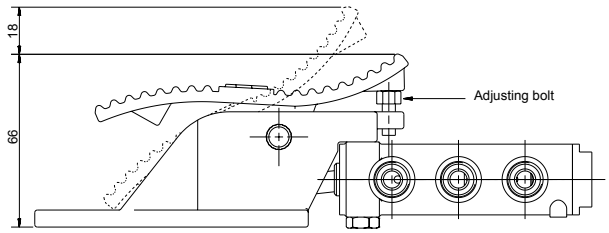
3 port 5 port

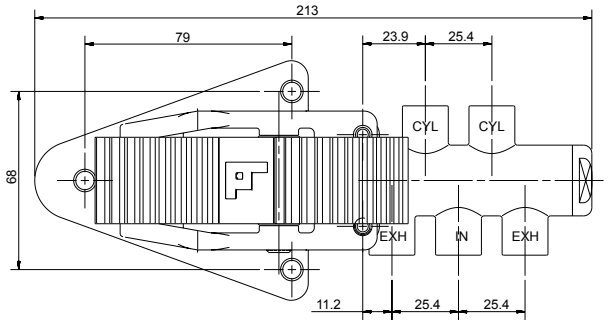
Function : 3 port





Function : 5 port

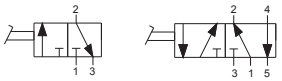




How to Order

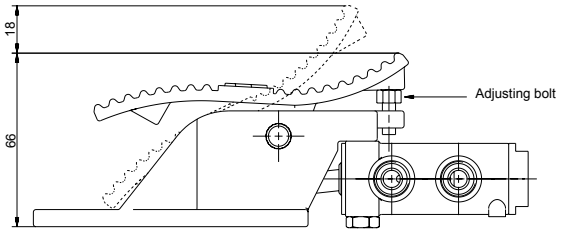
PEM	-	PORT SIZE		-	FUNCTION		-	PDS	-	SEAL MATERIAL	
		1/4" BSP	0		3 port	3				NBR	N
		1/4" NPT	1		5 port	5				FKM	V

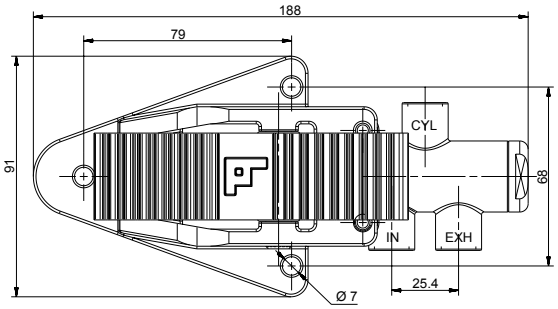
PEM5-PD | Foot Return Foot | 1/4" | 3 & 5 port

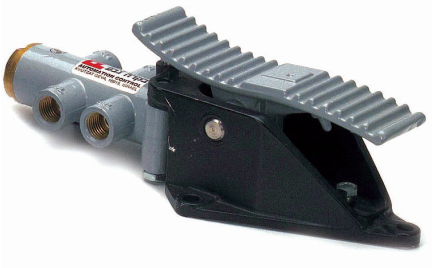


3 port 5 port

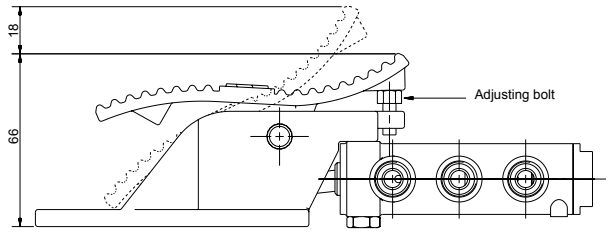
Function : 3 port

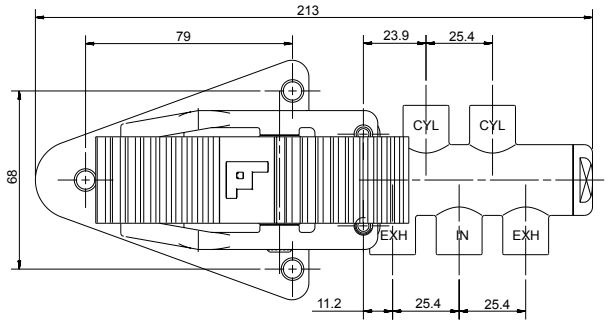






Function : 5 port



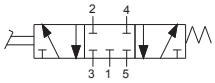


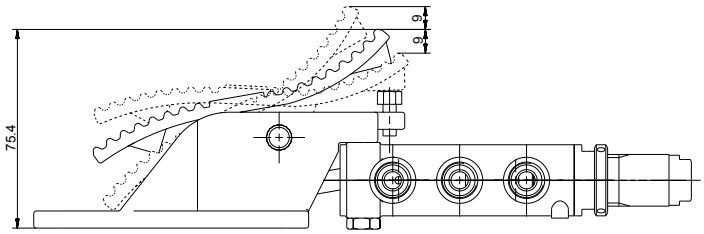
How to Order

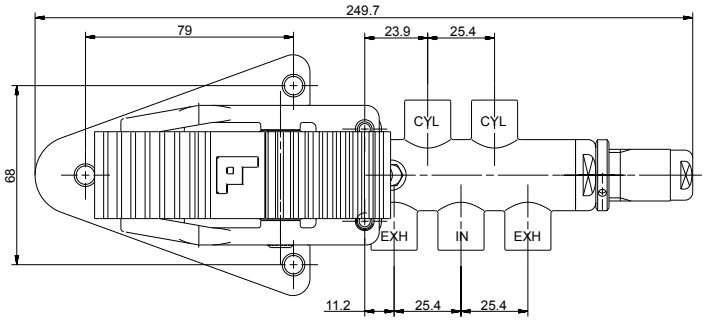
PEM	-	PORT SIZE		-	FUNCTION		-	PD	-	SEAL MATERIAL	
		1/4" BSP	0		3 port	3				NBR	N
		1/4" NPT	1		5 port	5				FKM	V

PE | Mechanically Operated

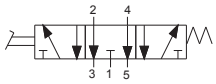
PEM5-PE-P | 3 Position Closed Center-Foot Return to Center | 1/4" | 5 port

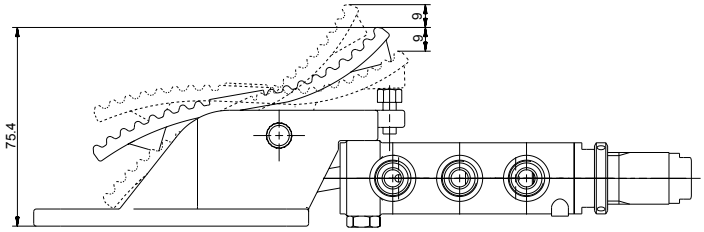


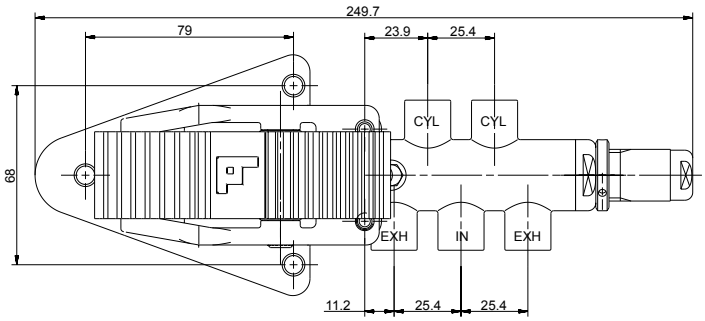




PEM5-PE-U | 3 Position Exhaust Center-Foot Return to Center | 1/4" | 5 port



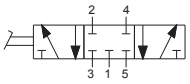


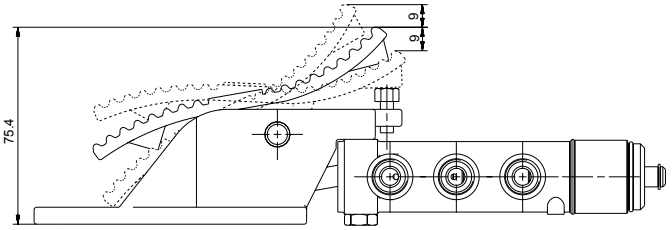


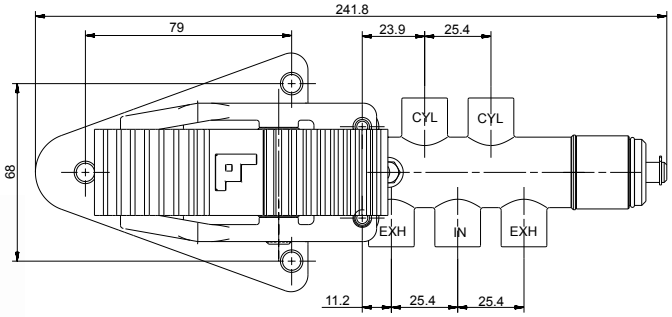
How to Order

PEM5	-	PORT SIZE		-	FUNCTION		-	PE	-	SEAL MATERIAL	
		1/4" BSP	0		Closed Center	P				NBR	N
		1/4" NPT	1		Exhaust Center	U				FKM	V

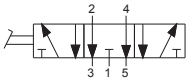
PEM5-PE-M | 3 Position Closed Center-Foot
Stable | 1/4" | 5 port

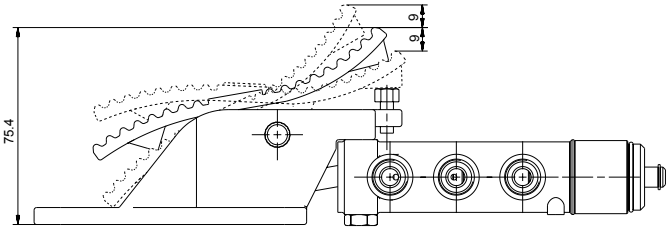


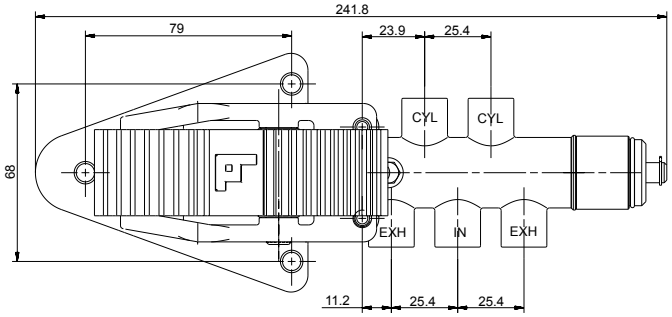




PEM5-PE-W | 3 Position Exhaust Center-Foot
Stable | 1/4" | 5 port







How to Order

PEM5	-	PORT SIZE		-	FUNCTION		-	PE	-	SEAL MATERIAL	
		1/4" BSP	0		Closed Center	M				NBR	N
		1/4" NPT	1		Exhaust Center	W				FKM	V

PE | Air Operated

- Heavy duty brass valves, air operated
- 3/2, 5/2, 5/3
- Port size : 1/4" & 1/2" BSP & NPT

Application

- Suitable for use in aggressive environments such as mining, cement manufacturing and flour milling industries.

Technical Data

Fluid	Air / Inert gas / Water
Operation pressure	-1 to 10 bar
Ambient temperature	-5° to 55° C (option for FKM seals) up to 150° C
Lubrication	Not required (use turbine oil class ISO VG32 if lubricated)
Port size	1/4" & 1/2" BSP or NPT
Flow rate (Air)	1/4" port size = 1,100 L/min (at 5.5 bar) 1/2" port size = 3,500 L/min (at 5.5 bar)
Minimum pilot pressure	Air-Air : 2.5 bar Air-Spring : 3 bar Air-Dif : 2.5 bar Cyl-Cyl : 0.5 bar Cyl-Spring : 0.7 bar

Dif Pres for Air Assy

Air-Spring

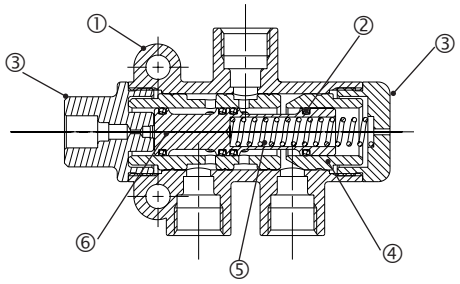
Cyl-Dif

Cyl-Spring

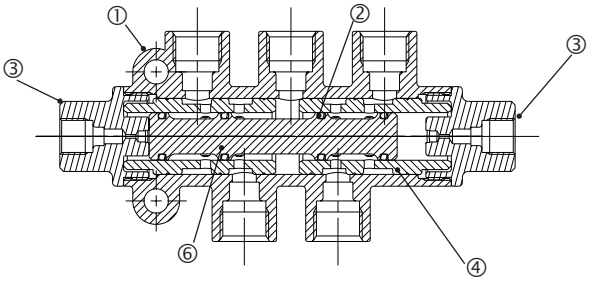
Air-Air

Construction

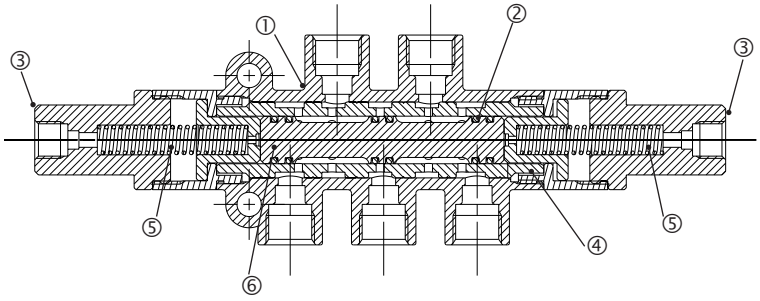
3 port Air-Spring valve



5 port Air-Air valve



5 port, 3 Position Air-Air valve



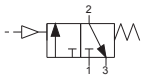
Component Parts

No.	Description	Material
1	Body	Brass *
2	"O" ring	NBR or FKM
3	End cover	Brass
4	Sleeve	Brass
5	Spring	-
6	Spool	Brass

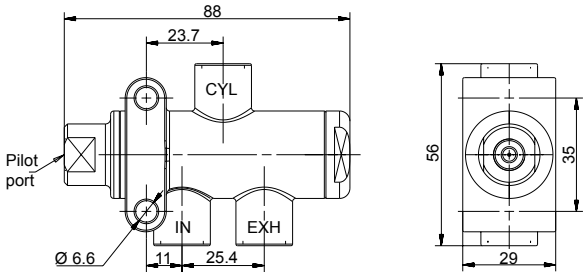
* Painted with grey polyester

PE | Air Operated

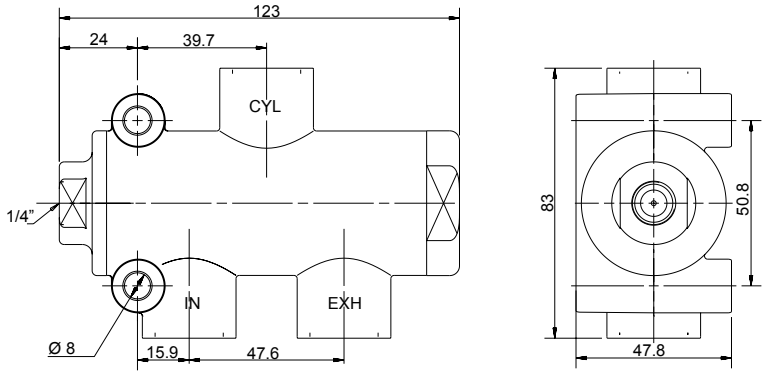
PEA3-S | Air-Spring | 1/4", 1/2" | 3 port



Port size : 1/4"



Port size : 1/2"

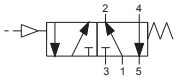


How to Order

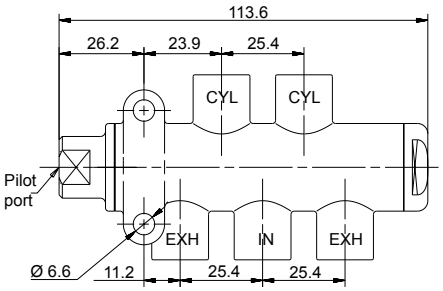
PEA3	-	PORT SIZE		-	S	-	SEAL MATERIAL		-	PILOT PORT SIZE (1)	
		1/4" BSP	0				NBR	N		1/8" BSP	0
		1/4" NPT	1				FKM	V		1/4" BSP	1
		1/2" BSP	2							1/4" NPT	2
		1/2" NPT	3								

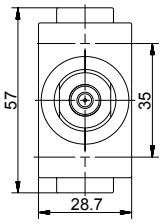
(1) Applicable for 1/4" valve only

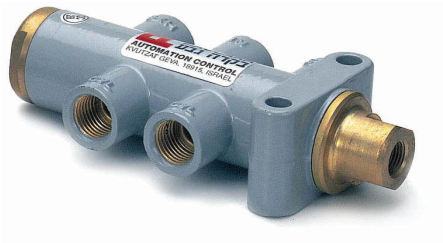
PEA5-S | Air-Spring | 1/4", 1/2" | 5 port



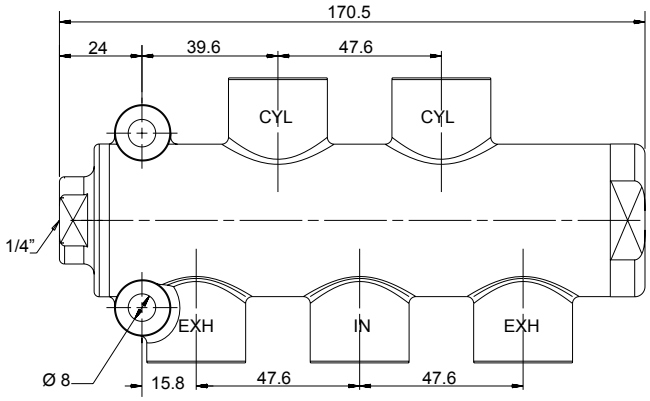
Port size : 1/4"

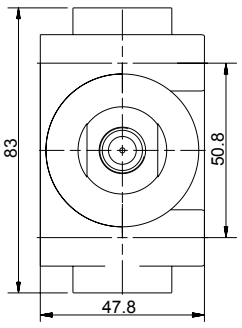






Port size : 1/2"





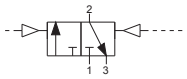
How to Order

PEA5	-	PORT SIZE		-	S	-	SEAL MATERIAL		-	PILOT PORT SIZE (1)	
		1/4" BSP	0				NBR	N		1/8" BSP	0
		1/4" NPT	1				FKM	V		1/4" BSP	1
		1/2" BSP	2							1/4" NPT	2
		1/2" NPT	3								

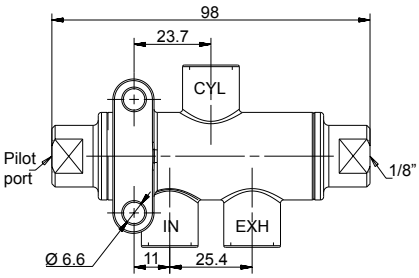
(1) Applicable for 1/4" valve only

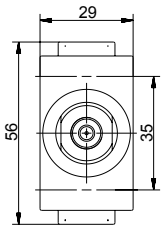
PE | Air Operated

PEA3-D | Air-Air | 1/4", 1/2" | 3 port

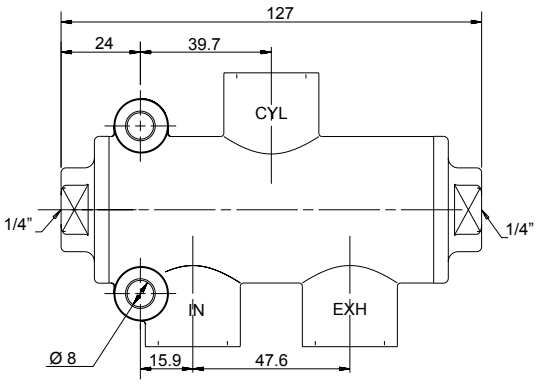


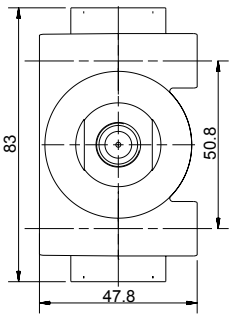
Port size : 1/4"





Port size : 1/2"



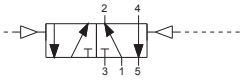


How to Order

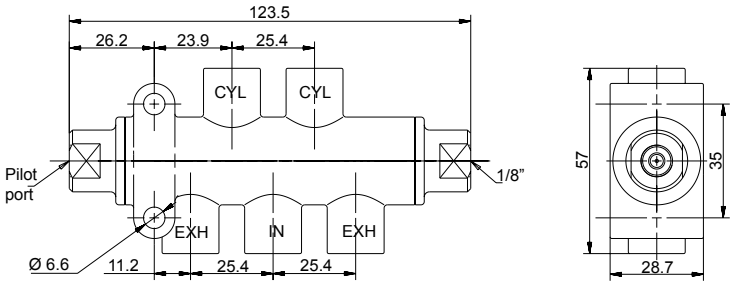
PEA3	-	PORT SIZE		-	D	-	SEAL MATERIAL		-	PILOT PORT SIZE (1)	
		1/4" BSP	0				NBR	N		1/8" BSP	0
		1/4" NPT	1				FKM	V		1/4" BSP	1
		1/2" BSP	2							1/4" NPT	2
		1/2" NPT	3								

(1) Applicable for 1/4" valve only

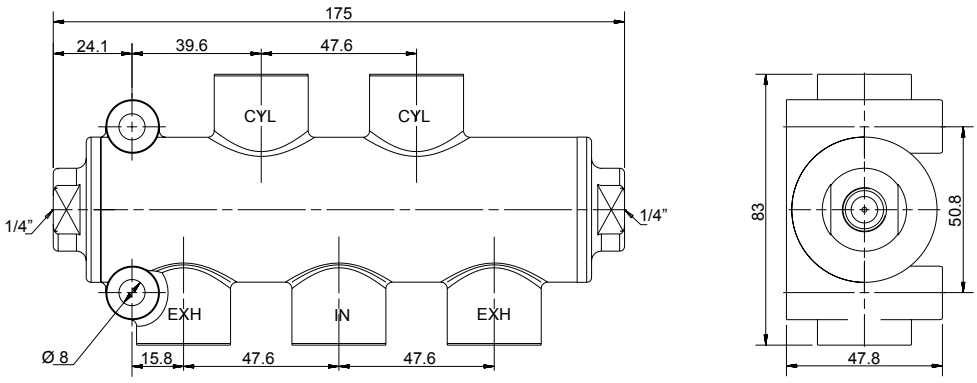
PEA5-D | Air-Air | 1/4", 1/2" | 5 port



Port size : 1/4"



Port size : 1/2"



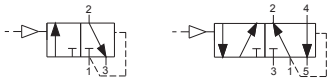
How to Order

PEA5	-	PORT SIZE		-	D	-	SEAL MATERIAL		-	PILOT PORT SIZE (1)	
		1/4" BSP	0				NBR	N		1/8" BSP	0
		1/4" NPT	1				FKM	V		1/4" BSP	1
		1/2" BSP	2							1/4" NPT	2
		1/2" NPT	3								

(1) Applicable for 1/4" valve only

PE | Air Operated

PEA-DF | Air-Differential | 1/4" | 3 & 5 port



3 port 5 port

Function : 3 port

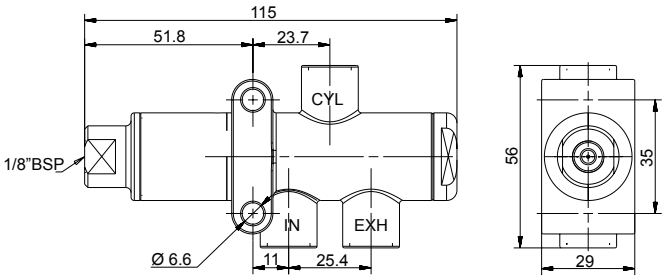
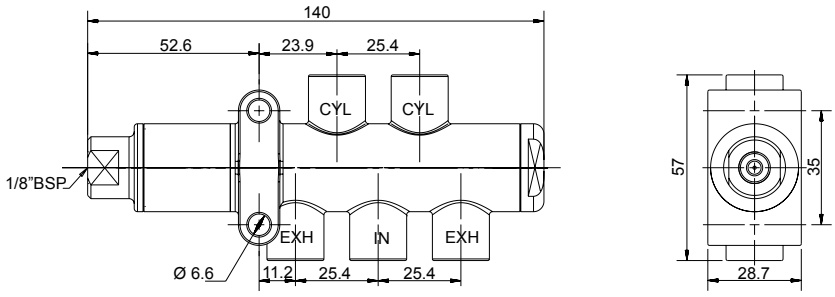


*Image is 5/2 valve

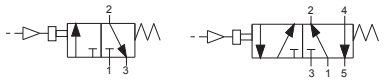
Function : 5 port



How to Order

PEA	-	PORT SIZE	-	FUNCTION	-	DF	-	SEAL MATERIAL
		1/4" BSP 0		3 port 3				NBR N
				5 port 5				FKM V

PEA-S | Cyl-Spring | 1/4" | 3 & 5 port



3 port 5 port

Function : 3 port

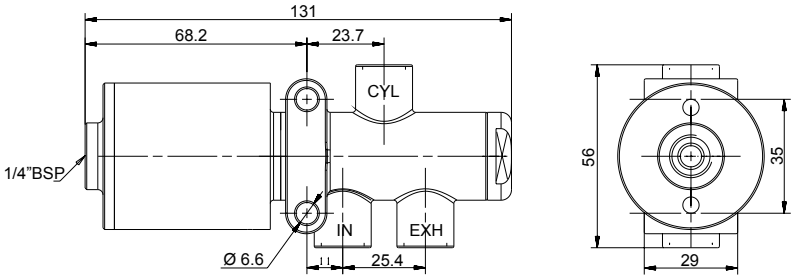
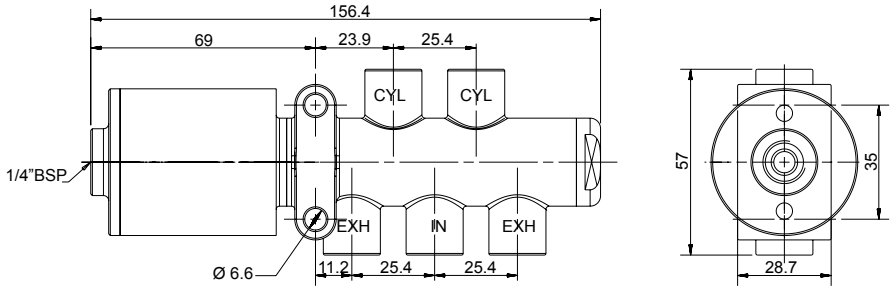


*Image is 5/2 valve

Function : 5 port

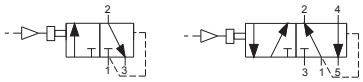


How to Order

PEA	-	PORT SIZE		-	FUNCTION		-	S	-	SEAL MATERIAL	
		1/4" BSP	0		3 port	3				NBR	N
					5 port	5				FKM	V

PE | Air Operated

PEA-DF | Cyl-Dif | 1/2" | 3 & 5 port



3 port 5 port

Function : 3 port

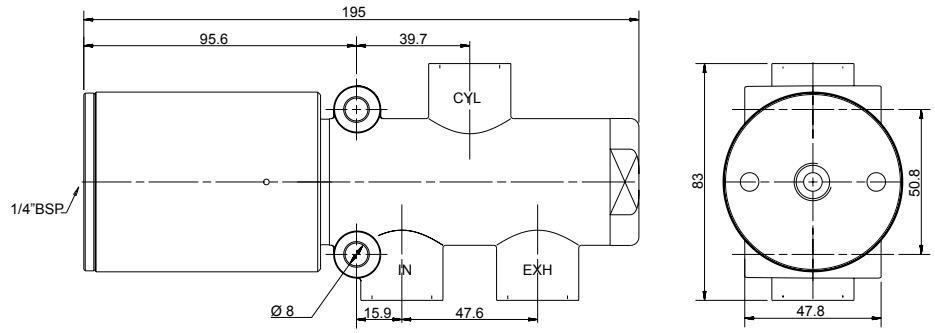
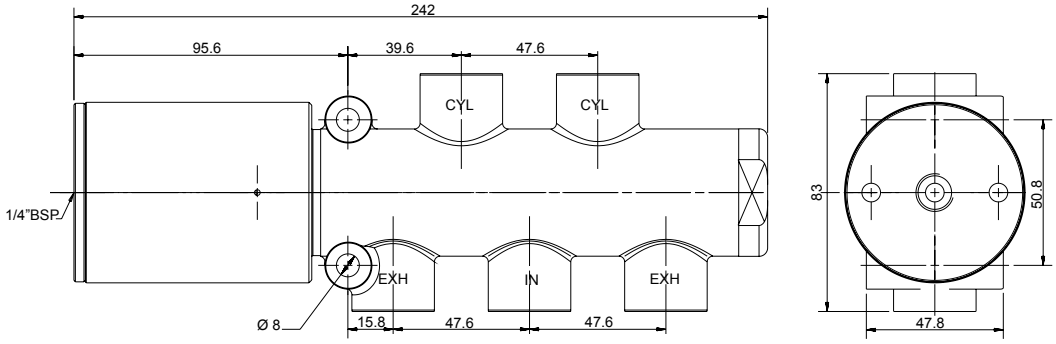


*Image is 3/2 valve

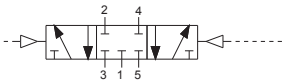
Function : 5 port

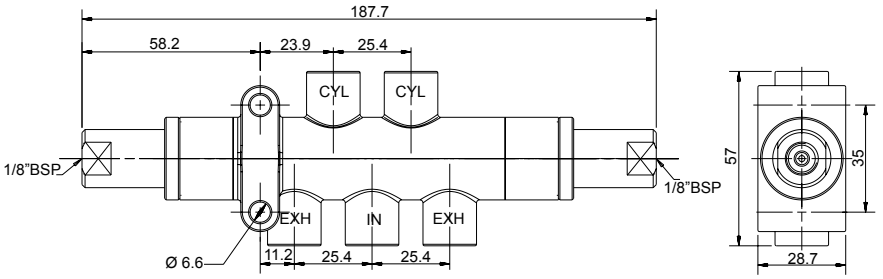


How to Order

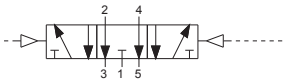
PEA	-	PORT SIZE	-	FUNCTION	-	DF	-	SEAL MATERIAL
		1/2" BSP 2		3 port 3				NBR N
				5 port 5				FKM V

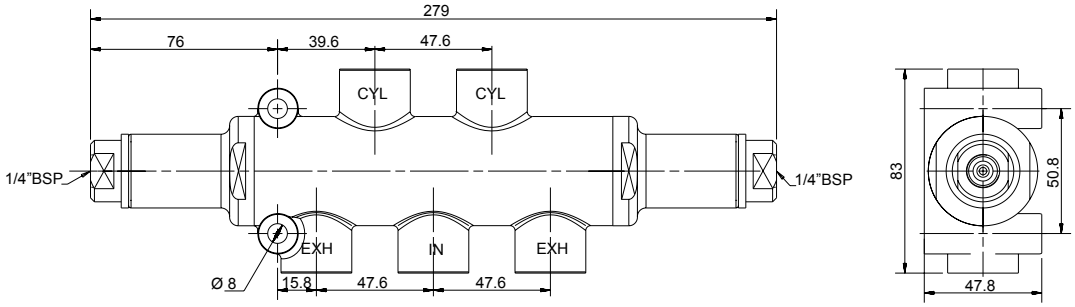
PEA5-P | 3 Position Closed Center | Air-Air | 1/4" | 5 port





PEA5-U | 3 Position Exhaust Center | Air-Air | 1/2" | 5 port





How to Order

PEA5	-	PORT SIZE		-	FUNCTION		-	SEAL MATERIAL	
		1/4" BSP	0		Closed Center	P		NBR	N
		1/2" BSP	2		Exhaust Center	U		FKM	V

PE | Solenoid Operated

- Heavy duty brass valves, solenoid operated
- 3/2, 5/2, 5/3
- Port size : 1/4" & 1/2" BSP & NPT

Sol-Spring

Application

- Suitable for use in aggressive environments such as mining, cement manufacturing and flour milling industries.

Sol-Air

Technical Data

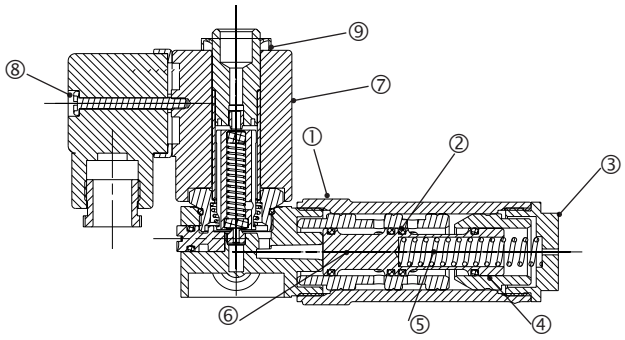
Fluid	Air / Inert gas / Water
Operation pressure	-1 to 10 bar
Ambient temperature	-5° to 55° C (option for FKM seals) up to 150° C
Lubrication	Not required (use turbine oil class ISO VG32 if lubricated)
Port size	1/4" & 1/2" BSP or NPT
Flow rate (Air)	1/4" port size = 1,100 L/min (at 5.5 bar) 1/2" port size = 3,500 L/min (at 5.5 bar)
Coil voltage	6V DC & 12-24-48-110-120-230V AC/DC
Power consumption	26VA - 10W
Minimum pilot pressure	All valves : 3 bar


Sol-Sol

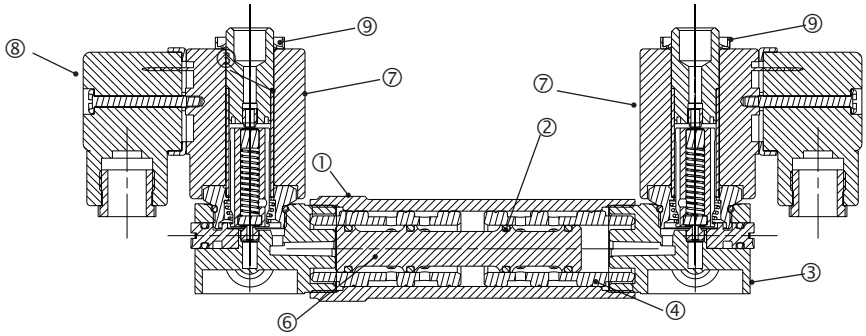

3 position Closed Center

Construction

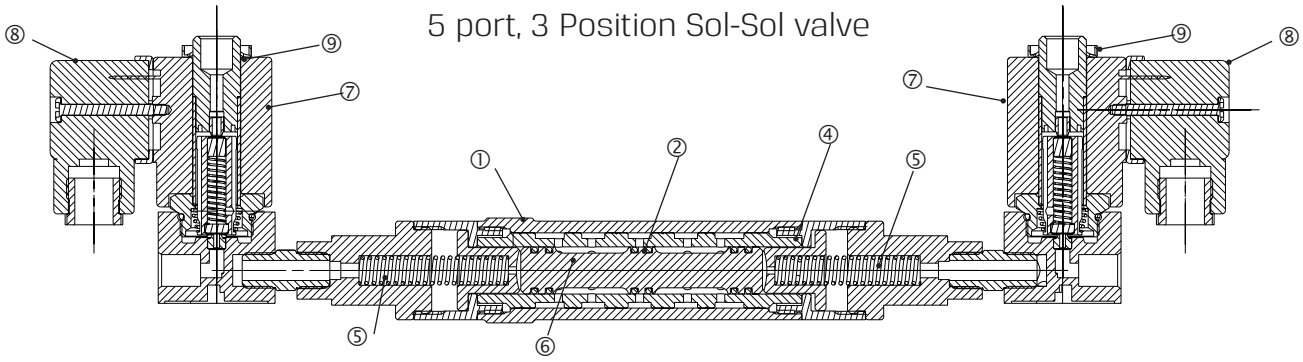
3 port Sol-Spring valve



5 port Sol-Sol valve



5 port, 3 Position Sol-Sol valve



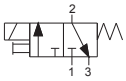
Component Parts

No.	Description	Material
1	Body	Brass *
2	"O" ring	NBR or FKM
3	End cover	Brass
4	Sleeve	Brass
5	Spring	-
6	Spool	Brass
7	Solenoid coil	
8	Connector	
9	Tightening	

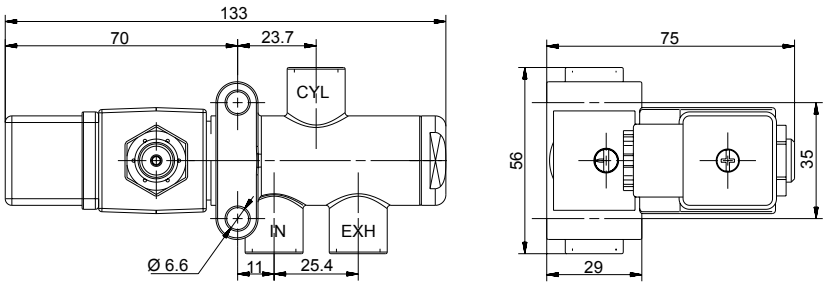
* Painted with grey polyester

PE | Solenoid Operated

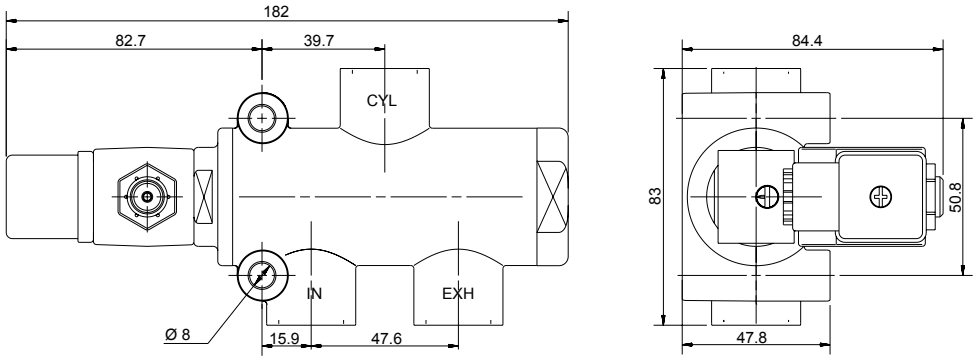
PES3-S | Sol-Spring | 1/4", 1/2" | 3 port



Port size : 1/4"



Port size : 1/2"

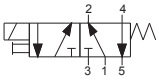


How to Order

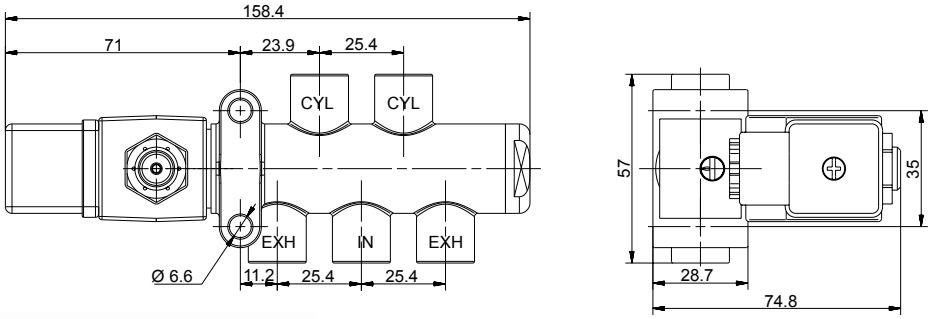
PES3	-	PORT SIZE		-	S	-	SEAL MATERIAL		-	EXTERNAL AIR SUPPLY (1)		-	MANUAL OVERRIDE		-	COIL VOLTAGE		-	POWER		-	CONNECTOR	
		1/4" BSP	0				NBR	N		without	1		None	0		without	0		none	0		without	0
		1/4" NPT	1				FKM	V		with	2		Plastic	1		6	1		AC 8W50Hz	1		standard	1
		1/2" BSP	2										Brass slot	2(2)		12	2		AC 8W60Hz	2		with LED	2
		1/2" NPT	3										non-locking St.st knob	3(2)		24	3		DC10W	3		with LED + surge protection	3
													locking St.st knob	4(2)		48	4					with 1/2" hub	4
																110	5						
																120	6						
																230	7						
																240	8						
																other	9						

(1) Only for BSP
(2) Special order

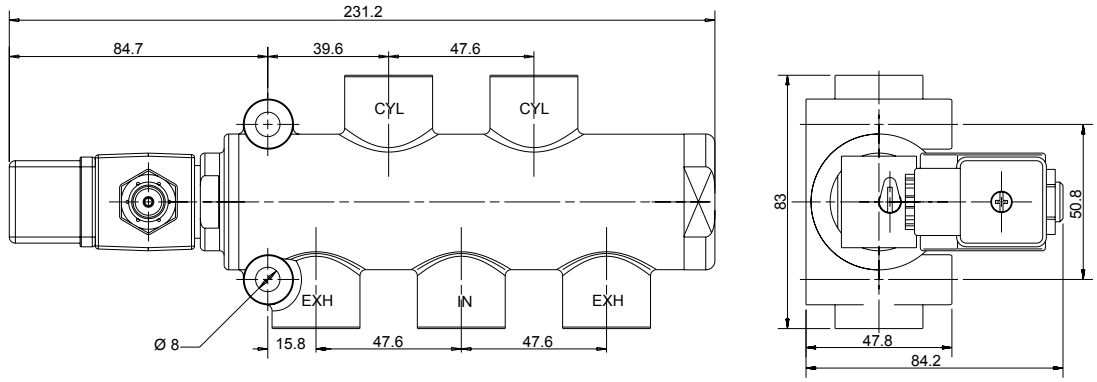
PES5-S | Sol-Spring | 1/4", 1/2" | 5 port



Port size : 1/4"



Port size : 1/2"



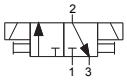
How to Order

PES5	-	PORT SIZE		-	S	-	SEAL MATERIAL		-	EXTERNAL AIR SUPPLY (1)		-	MANUAL OVERRIDE		-	COIL VOLTAGE		-	POWER		-	CONNECTOR	
		1/4" BSP	0				NBR	N		without	1		None	0		without	0		none	0		without	0
		1/4" NPT	1				FKM	V		with	2		Plastic	1		6	1		AC 8W50Hz	1		standard	1
		1/2" BSP	2										Brass slot	2(2)		12	2					with LED	2
		1/2" NPT	3										non-locking St.st knob	3(2)		24	3		AC 8W60Hz	2		with LED + surge protection	3
													locking St.st knob	4(2)		48	4		DC10W	3			
																110	5					with 1/2" hub	4
																120	6						
																230	7						
																240	8						
																other	9						

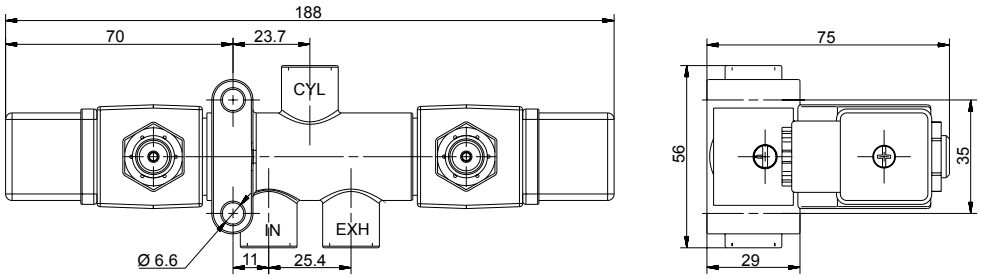
(1) Only for BSP
(2) Special order

PE | Solenoid Operated

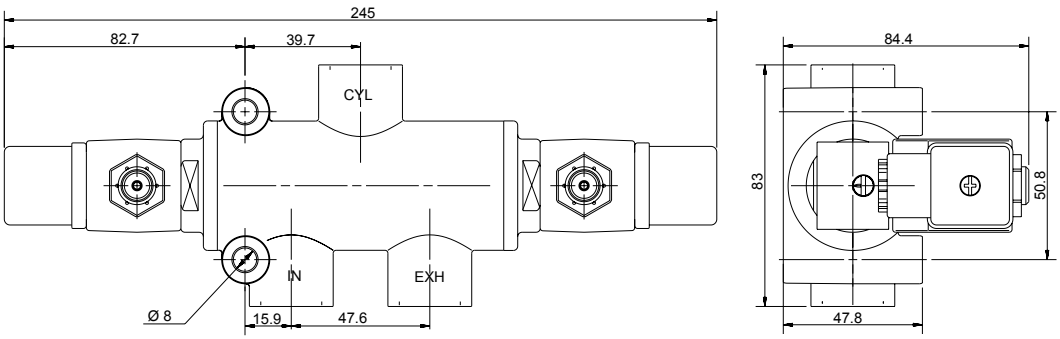
PES3-D | Sol-Sol | 1/4", 1/2" | 3 port



Port size : 1/4"



Port size : 1/2"

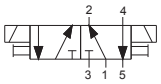


How to Order

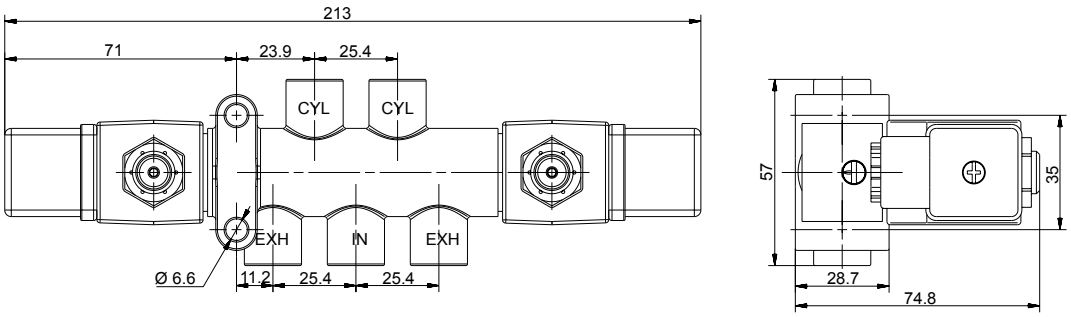
PES3	-	PORT SIZE		-	D	-	SEAL MATERIAL		-	EXTERNAL AIR SUPPLY (1)		-	MANUAL OVERRIDE		-	COIL VOLTAGE		-	POWER		-	CONNECTOR	
		1/4" BSP	0				NBR	N		without	1		None	0		without	0		none	0		without	0
		1/4" NPT	1				FKM	V		with	2		Plastic	1		6	1		AC 8W50Hz	1		standard	1
		1/2" BSP	2										Brass slot	2(2)		12	2		AC 8W60Hz	2		with LED	2
		1/2" NPT	3										non-locking St.st knob	3(2)		24	3		DC10W	3		with LED + surge protection	3
													locking St.st knob	4(2)		48	4						
																110	5					with 1/2" hub	4
																120	6						
																230	7						
																240	8						
																other	9						

(1) Only for BSP
(2) Special order

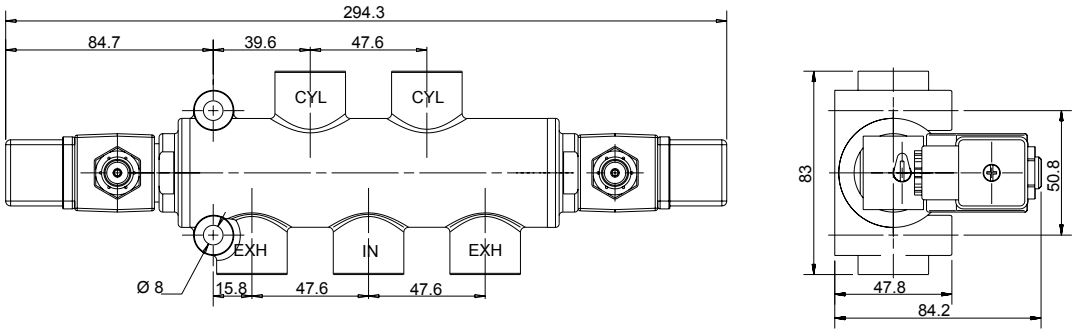
PES5-D | Sol-Sol | 1/4", 1/2" | 5 port



Port size : 1/4"



Port size : 1/2"



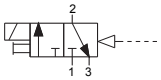
How to Order

PES5	-	PORT SIZE		-	D	-	SEAL MATERIAL		-	EXTERNAL AIR SUPPLY (1)		-	MANUAL OVERRIDE		-	COIL VOLTAGE		-	POWER		-	CONNECTOR	
		1/4" BSP	0				NBR	N		without	1		None	0		without	0		none	0		without	0
		1/4" NPT	1				FKM	V		with	2		Plastic	1		6	1		AC 8W50Hz	1		standard	1
		1/2" BSP	2										Brass slot	2(2)		12	2		AC 8W60Hz	2		with LED	2
		1/2" NPT	3										non-locking St.st knob	3(2)		24	3		DC10W	3		with LED + surge protection	3
													locking St.st knob	4(2)		48	4						
																110	5					with 1/2" hub	4
																120	6						
																230	7						
																240	8						
																other	9						

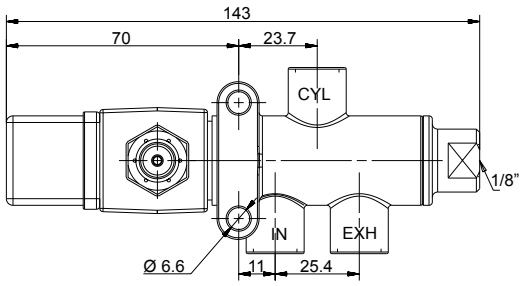
(1) Only for BSP
(2) Special order

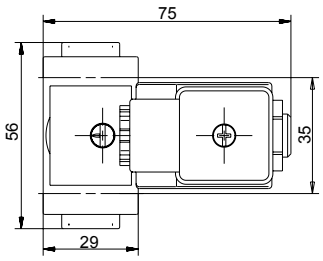
PE | Solenoid Operated

PES3-A | Sol-Air | 1/4", 1/2" | 3 port

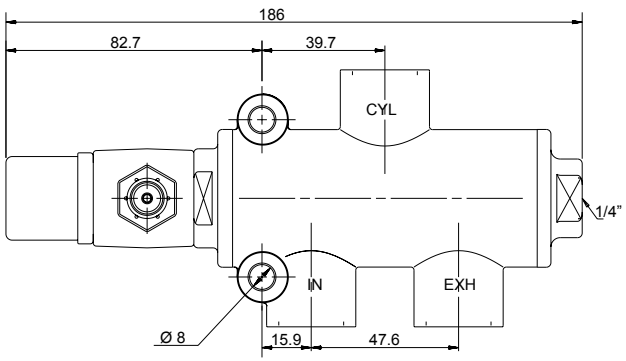


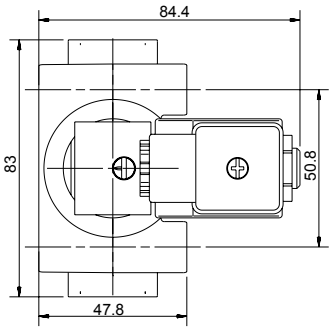
Port size : 1/4"





Port size : 1/2"



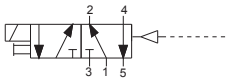


How to Order

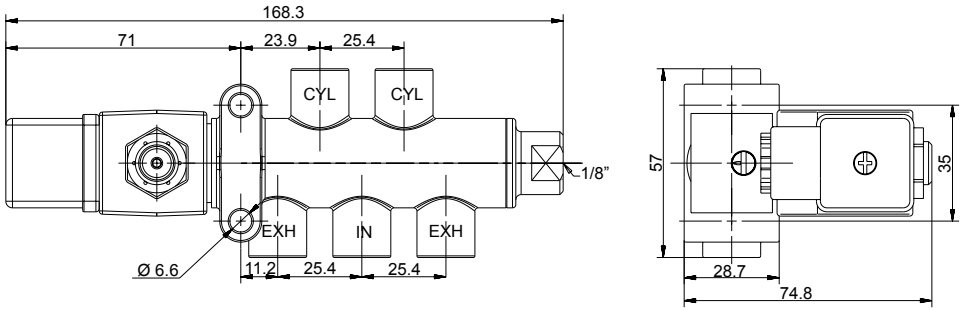
PES3	-	PORT SIZE		-	A	-	SEAL MATERIAL		-	EXTERNAL AIR SUPPLY (1)		-	MANUAL OVERRIDE		-	COIL VOLTAGE		-	POWER		-	CONNECTOR	
		1/4" BSP	0				NBR	N		without	1		None	0		without	0		none	0		without	0
		1/4" NPT	1				FKM	V		with	2		Plastic	1		6	1		AC 8W50Hz	1		standard	1
		1/2" BSP	2										Brass slot	2(2)		12	2		AC 8W60Hz	2		with LED	2
		1/2" NPT	3										non-locking St.st knob	3(2)		24	3		DC10W	3		with LED + surge protection	3
													locking St.st knob	4(2)		48	4					with 1/2" hub	4
																110	5						
																120	6						
																230	7						
																240	8						
																other	9						

(1) Only for BSP
(2) Special order

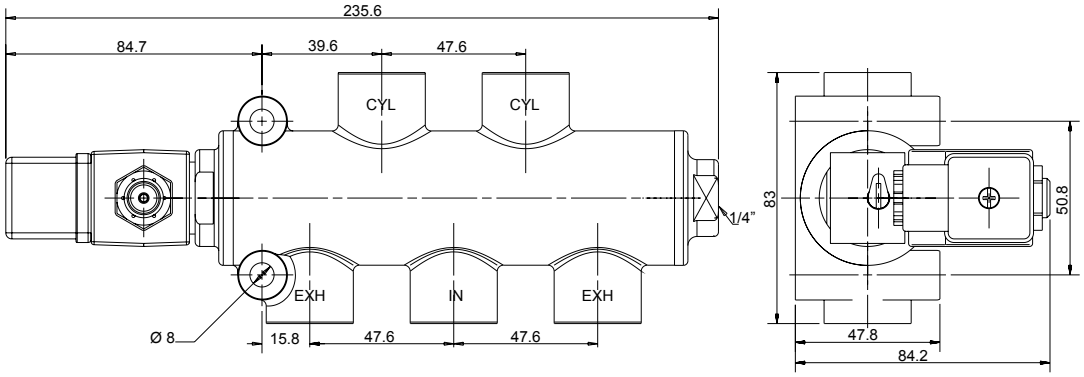
PES5-A | Sol-Air | 1/4", 1/2" | 5 port



Port size : 1/4"



Port size : 1/2"



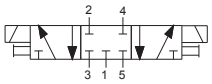
How to Order

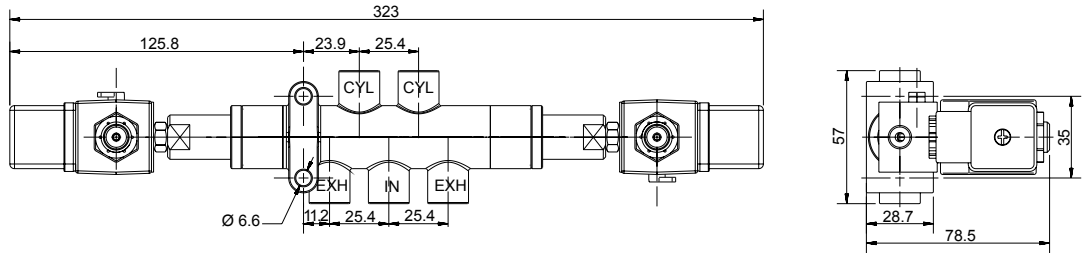
PES5	-	PORT SIZE		-	A	-	SEAL MATERIAL		-	EXTERNAL AIR SUPPLY (1)		-	MANUAL OVERRIDE		-	COIL VOLTAGE		-	POWER		-	CONNECTOR	
		1/4" BSP	0				NBR	N		without	1		None	0		without	0		none	0		without	0
		1/4" NPT	1				FKM	V		with	2		Plastic	1		6	1		AC 8W50Hz	1		standard	1
		1/2" BSP	2										Brass slot	2(2)		12	2					with LED	2
		1/2" NPT	3										non-locking St.st knob	3(2)		24	3		AC 8W60Hz	2		with LED + surge protection	3
													locking St.st knob	4(2)		48	4		DC10W	3			
																110	5					with 1/2" hub	4
																120	6						
																230	7						
																240	8						
																other	9						

(1) Only for BSP
(2) Special order

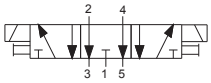
PE | Solenoid Operated

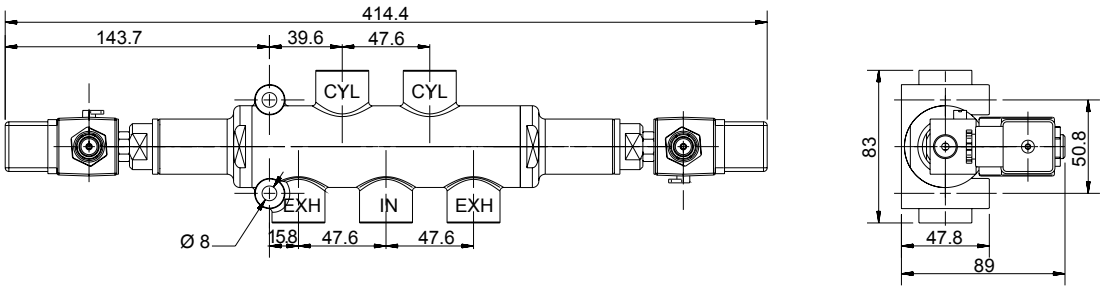
PES5-P | 3 Position Closed Center | Sol-Sol | 1/4" | 5 port





PES5-U | 3 Position Exhaust Center | Sol-Sol | 1/2" | 5 port





How to Order

PES5	-	PORT SIZE		-	FUNCTION		-	SEAL MATERIAL		-	EXTERNAL AIR SUPPLY (1)		-	MANUAL OVERRIDE		-	COIL VOLTAGE		-	POWER		-	CONNECTOR	
		1/4" BSP	0		Closed Center	P		NBR	N		without	1		None	0		without	0		none	0		without	0
		1/2" BSP	2		Exhaust Center	U		FKM	V		with	2		Plastic	1		6	1		AC 8W50Hz	1		standard	1
														Brass slot	2(2)		12	2					with LED	2
														non-locking St.st knob	3(2)		24	3		AC 8W60Hz	2		with LED + surge protection	3
														locking St.st knob	4(2)		48	4		DC10W	3			
																	110	5					with 1/2" hub	4
																	120	6						
																	230	7						
																	240	8						
																	other	9						

(1) Only for BSP
(2) Special order


BACCARA®
AUTOMATION & CONTROL

TECHNICAL INFORMATION

Valve Functions

Two way valves have one orifice and two ports : one inlet and one outlet. They are available with the following functions :

- Normally Closed (NC) **Fig. 1** - valve is closed for flow through the valve when the coil is de-energized.
- Normally Open (NO) **Fig. 2** - valve is open for flow through the valve when the coil is de-energized.

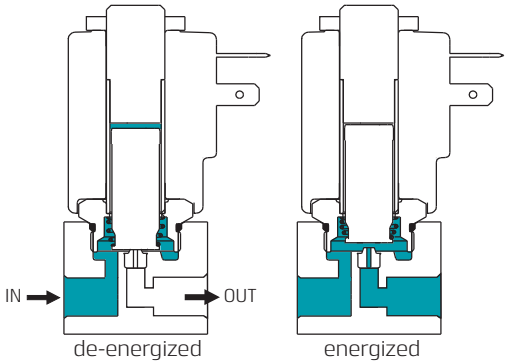


Fig. 1

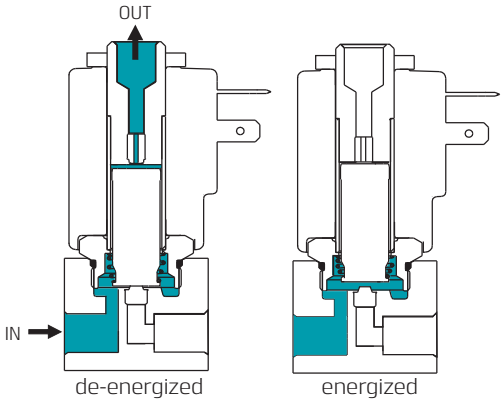


Fig. 2

Three way valves have two orifice and three ports : inlet, outlet and exhaust. They are available with the following functions :

- Normally Closed (NC) **Fig. 3** - no flow from inlet port, flow is from outlet port to the exhaust.
- Normally Open (NO) **Fig. 4** - flow from inlet port, no flow from the exhaust port.

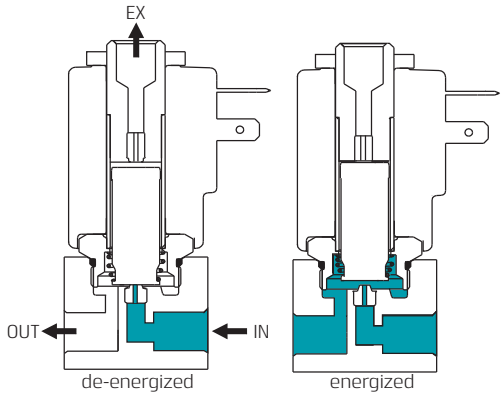


Fig. 3

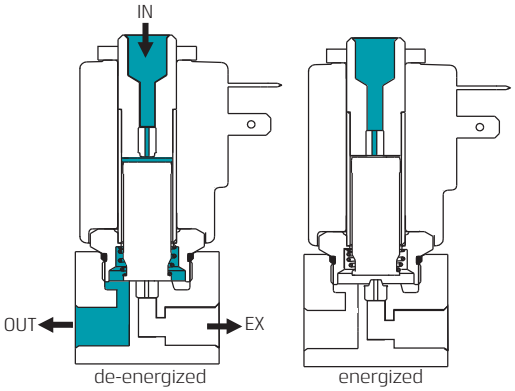


Fig. 4

Also available are the following non-standard functions : Divertor **Fig. 5** - one inlet pressure with two outlets, one outlet is NO and the other NC. Selector **Fig. 6** - two inlet pressures, one inlet is NO and the other NC.

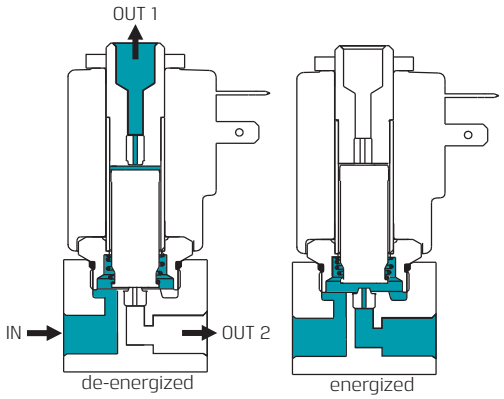


Fig. 5

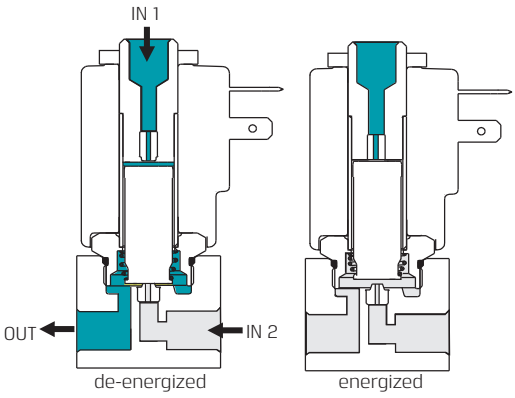


Fig. 6

Operating Mechanism

A solenoid valve is a combination of two functional units :
- A solenoid (electromagnet) with a moving core (plunger).
- A valve body containing the right orifices and seals mechanism.

The plunger in a solenoid valve moves and changes the flow direction when a current is supplied to the electromagnet.

There are two basic types of Baccara GEM-SOL® valves :

Direct operated solenoid valves

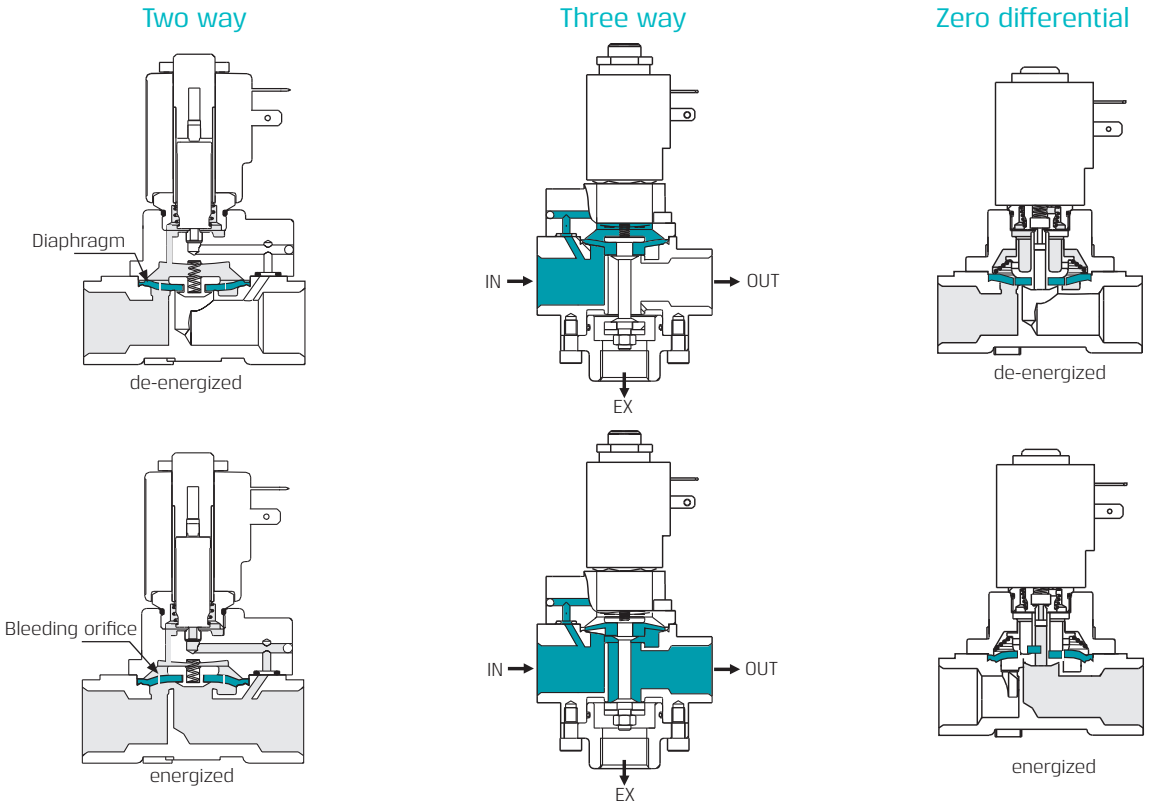
When the solenoid is energized in a direct acting valve, the plunger moves and directly acts on the valve disc to open, close or change the flow direction. Direct acting valves' performance depends directly on the orifice pressure and the magnetic power. The increase of line pressure or the orifice size requires more power from the electromagnet.

Pilot operated solenoid valves

These valves are recommended for applications where high flow at high pressure is required. A pilot chamber is used which is controlled by a direct acting solenoid valve. The movement of the plunger changes the pressure in the pilot chamber. When there is pressure in the pilot chamber the valve is closed. GEM-SOL® pilot valves are equipped with diaphragm, according to the valve function.
- Two way valves have a bleeding passage in the diaphragm, through which the pilot pressure flows into the pilot chamber; and one orifice to release the pressure when the solenoid is energized.
- Three way valves have a three way pilot solenoid to control the pilot chamber pressure.
- Pilot operated valves require a minimum operating pressure.

Zero differential valves

We also manufacture a two way pilot operated valve which works without differential pressure. For this type of valve, a mechanical spring helps to lift the diaphragm.



Valve Sizing

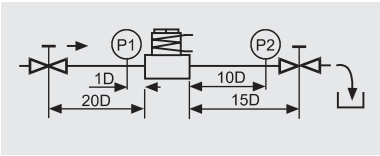
General
It is not recommended to select a solenoid valve according to its pipe connection port or its orifice size. The valve selection depends on the knowledge of the following factors:
pressure range minimum and maximum, differential pressure, minimum and maximum flow rate, the specific gravity of the fluid, temperature, viscosity, etc.

Pressure
The pressure is generally measured above the atmospheric pressure and is expressed in kg/cm² or bars of relative pressure.
The value of pressure terms in this catalog corresponds to the relative pressure.

Pressure drop △P
This is the difference of pressure between the upstream P1 and the downstream P2 of the valve when it is crossed by the fluid.

Differential pressure
Minimum - maximum
This is the minimum or maximum difference of pressure between the upstream P1 and the downstream P2 which secures perfect functioning of the device. Only a pilot operated solenoid valve requires the minimum differential pressure to operate.

Flow - the flow factor Kv (Cv)
The flow of a solenoid valve is the quantity of fluid per time units crossing the valve under certain conditions. It is this factor which determines its size. To obtain a simpler method of calculation and comparison between the various types of valves, all variables permitting the calculation of the flow have been reduced to a common denominator : the flow factor Kv (without units). The Kv factor can be determined by the flow chart or by calculation. When the Kv factor is determined, select the solenoid valve which has the equivalent flow factor. The flow factor values given in this catalog have been set up according to the following method :



Fluid is water, specific gravity 1 kg/dm³ the pressure drop P1, P2 is 1Kg/cm² in a way that the Kv is equal to the flow in liter/min.

$$Q = Kv\sqrt{\frac{\Delta P}{\gamma}} \qquad Kv = Q\sqrt{\frac{\gamma}{\Delta P}}$$

When several valves are mounted in series, the resulting flow factor is equal to :

$$\frac{1}{Kv^2_{Tot}} = \frac{1}{Kv^2_1} + \frac{1}{Kv^2_2} + \frac{1}{Kv^2_3} + \ldots + \frac{1}{Kv^2_n}$$

When several valves are mounted in parallel, the resulting flow factor is equal to :

$$Kv_{Tot} = Kv1+Kv2+Kv3\ldots\ldots+Kvn$$

Unit conversion
Kv = flow factor (decimal units)
to convert
CV(USA) = 0.070Kv
f (UK) = 0.0585Kv
Kv = 14.28 Cv (USA)
Kv = 17.11 f (UK)

Viscosity
Practically, the flow Kv is identical for a valve crossed by water or a medium having up to 3ºE viscosity. The flow/pressure characteristic is effected above this limit. It is necessary to consider factor above 3ºE - the flow factor Kv will be :

$$Kv_x = Kv_{water}\, C$$

$$C = \frac{\delta\sqrt{Kv}}{200\ Q} + 1$$

δ = kinematic viscosity (in centistrokes) of the fluid
Q = flow in liter/min
Kv = flow factor given in catalog

This calculation leads to a choice of a valve with a higher flow factor value than the one which would have been chosen for a fluid having a viscosity of 3ºE.

Temperature
The limits of temperature of use of a solenoid valve depend essentially upon the nature of the discs and the design of the coil. The temperature developed in a solenoid valve is a function of the electrical characteristics of the coil, the duty cycle, the fluid and ambient temperatures. These parameters determine the "temperature of use".
For each type of solenoid valve, the temperature range is given in the technical data, however these figures are only a general guide. If temperature of use might extend the given limits, please contact our technical sales department.

Response time
The response time of a solenoid valve is the lapse of time between the electric signal and the outlet of fluid signal. The response time is effected by the following parameters:
Valve function, operating mode, orifice size, inlet pressure and pressure differential, fluid, temperature and coil characteristics.
The C.E.T.O.P defines the test of conditions as follows:
Test pressure : air at 6Kg/cm² - 85 PSI
Ambient temperature : 20º C - 68º F

Response time at energizing
Response time at energizing of the solenoid and until the outlet pressure reaches 90% of the test pressure.

Response time at de-energizing
Lapse of time between de-energizing of the solenoid and until the pressure outlet drops to 10% of the test pressure, see schemas of measure method and resulting curves for AC and DC current.
Average response time for GEM-SOL® valves can be assumed as follows:
- Direct acting solenoids 16 to 36 ms for complete cycle.
- Large direct acting solenoids 40 to 80 ms for complete cycle.
- Pilot operated valve 20 to 80 ms for complete cycle.

Cycling rate
The cycling rate of a solenoid depends directly on its response time. It is the number of cycles per minutes calculated for continuous operation. The valve should not be reversed at less than 90% or above 10% at discharging of reference pressure.

$$\text{Cycles/Minutes} = \frac{60 \text{ sec}}{R_{T_e} + R_{T_d}}$$

R_{T_e} = response time at energizing (sec)

R_{T_d} = response time at de-energizing (sec)

The cycling rate is the maximum possible cycles per minute of the solenoid valve. It varies when the valve is mounted in a circuit and depends then upon the installation pressure drop.

Electrical Parameters

The following parameters define a solenoid :

Tension (V) : volts
Frequency : 50 Hz, 60 Hz direct current etc.
Power consumption (w) : watts (VA) volt ampere

Intensity (A) : ampere at inrush holding
Resistance (R) : ohms
Impedance (Z) : ohms
Max. temperature of the coil
when continuously energized.

Alternating current

$U=Z \cdot I \quad I=\frac{U}{Z}$ $P = U \cdot I \cos \varphi$ (Watt)

$P = U \cdot I$ (VA)

$\cos \varphi = \frac{R}{Z}$

$Z = \sqrt{R^2+L^2\omega^2}$

L = inductance
ω= pulsation

Fig. 7

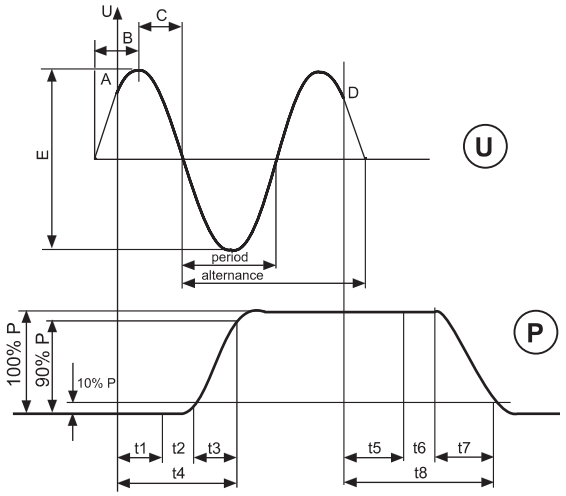
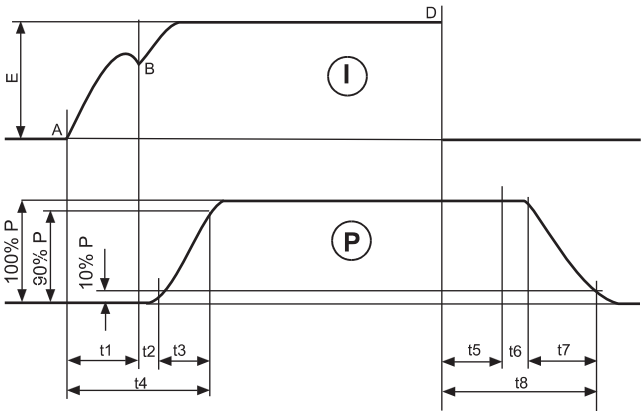


Fig. 7a



Response time

U	Voltage	E1	Plunger
I	Current	t2	Moving parts valve
E	Max. voltage	t3	Increase pressure
P	Pressure	t4	Response time at energizing
A	Switch ON	t5	t5 = t1, t6 = t2
B	Increasing current	t7	Pressure fall
C	Decreasing current	t8	Response time at de-energizing
D	Switch OFF		

Manual Overrides

Our solenoid valves are available with one of the following types of manual overrides :

Rotary type :

Manual override lifts the plunger by eccentric cam. It is available with the following options :

- Slot - made of Brass or Stainless steel, operated by a screw driver, up to 25 bar.
- Plastic - made of Nylon, operated by hand or screw driver, up to 12 bar.
- Knob - made of Brass or Stainless steel, operated by hand, up to 25 bar.

Push Lock :

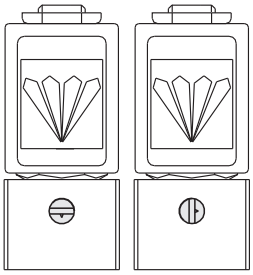
Manual override lifts the plunger when pushed in, 90° rotation locks it in "ON" position. Made of Stainless steel. Up to 12 bar.

Push Hold :

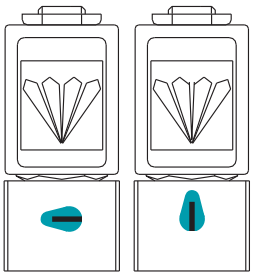
Manual override lifts the plunger when pushed in. Made of Stainless steel. Up to 12 bar.

Note: Valves used at pressure higher than 25 bar do not have manual override.

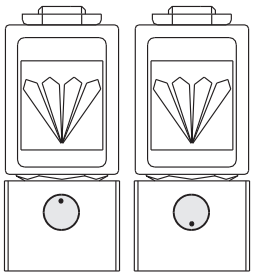
Rotary manual override



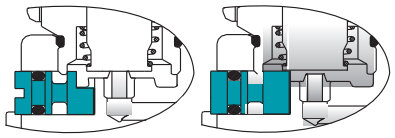
Slot manual override



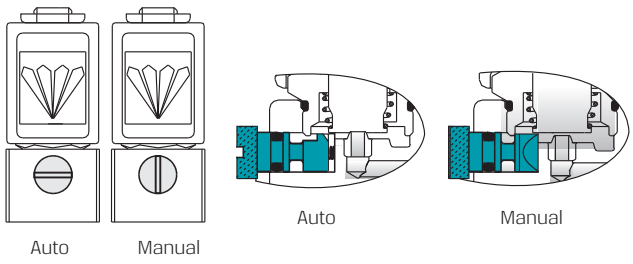
Plastic manual override



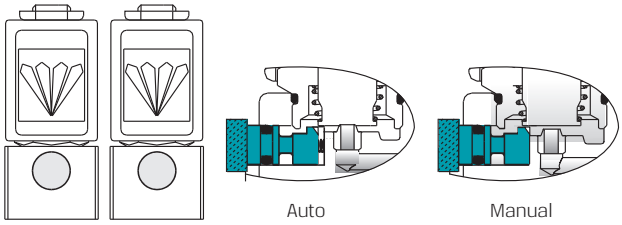
Knob manual override



Push Lock Manual Override



Push Hold Manual Override



GEM-SOL® Special Assembly Procedures

Valves for oxygen :

All valve parts degreased to remove all oil. Valve assembled in oil free area with oil free tools and tested with clean air. All ports are plugged and the valve is placed in a sealed bag.

Corrosion protection :

A special film of lubricant is applied to protect the internal parts of the valve from corrosion. This is highly recommended for applications where water drops can remain in the valve.

Reduced noise valves :

Two and three way valves with bumper to reduce the noise when the solenoid is energized. These valves are for DC only.

Silver shading ring :

Used on valves where media may attack standard copper rings, but not silver rings.

Helium leak detector :

We can provide valves and manifolds, tested for leak rates of up to 10^{-9} torr liter per min.

GEM-SOL® Elastomer materials

General information

GEM-SOL® solenoid valves can be used for many fluid types including acids, gases, solvents etc. To ensure appropriate functioning of the valve, particular care must be taken with the selection of the valve and seals materials. The information below summarizes the elastomers materials used for GEM-SOL® valves.

Please contact our technical department for further information.

NBR or BUNA-N

- NBR is a copolymer of butadiene and acrylonitrile. It is the most used elastomer in the seals industry and is the standard elastomer for GEM-SOL® valves.
- NBR is suitable for use from -20° C to 85°C. It has benefits over other elastomers with its compression set, tear and abrasion resistance.
- Air, cold water and inert gases are some of the materials NBR is recommended for.

EPDM - Ethylene Propylene Rubber

- EPDM is an elastomer made from ethylene and propylene monomers. It has a wider temperature range than NBR, -40° C to 149°C. Its main disadvantage is that it cannot be used with petroleum oils.
- Water, alcohol and acetone are some of the materials EPDM is recommended for.

Neoprene

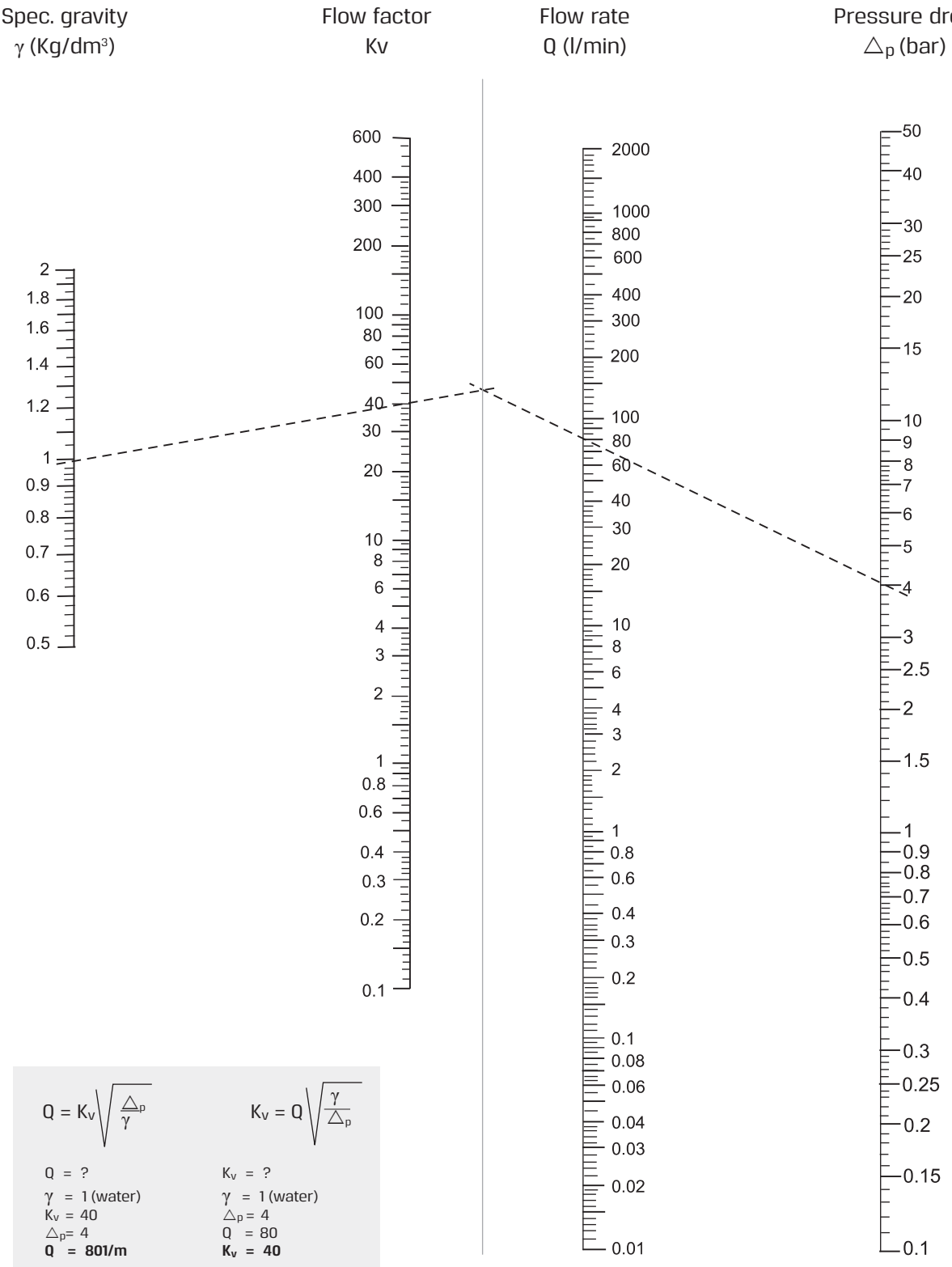
- Neoprene is homopolymers of chloroprene. It has a temperature range of -20° C to 85°C. Neoprene is unusual because it is resistant to both oxygen and petroleum.
- Refrigerants, oxygen and petroleum oils are some of the materials Neoprene is recommended for.

FKM

- FKM is a very important elastomer due to its wide compatibility to chemicals. It has a temperature range of -20°C to 180°C. This gives FKM a significant advantage over NBR, but it is still not the ultimate elastomer.
- Diesel oil, gasoline, some acids and trichlorethylene are some of the materials FKM is recommended for.

Flow Chart | Liquids

Kinematic viscosity : Max. 3° Engler



$$Q = K_v\sqrt{\frac{\triangle_p}{\gamma}} \qquad K_v = Q\sqrt{\frac{\gamma}{\triangle_p}}$$

Q = ?	K_v = ?
γ = 1 (water)	γ = 1 (water)
K_v = 40	$\triangle_p$ = 4
$\triangle_p$ = 4	Q = 80
Q = 801/m	**K_v = 40**

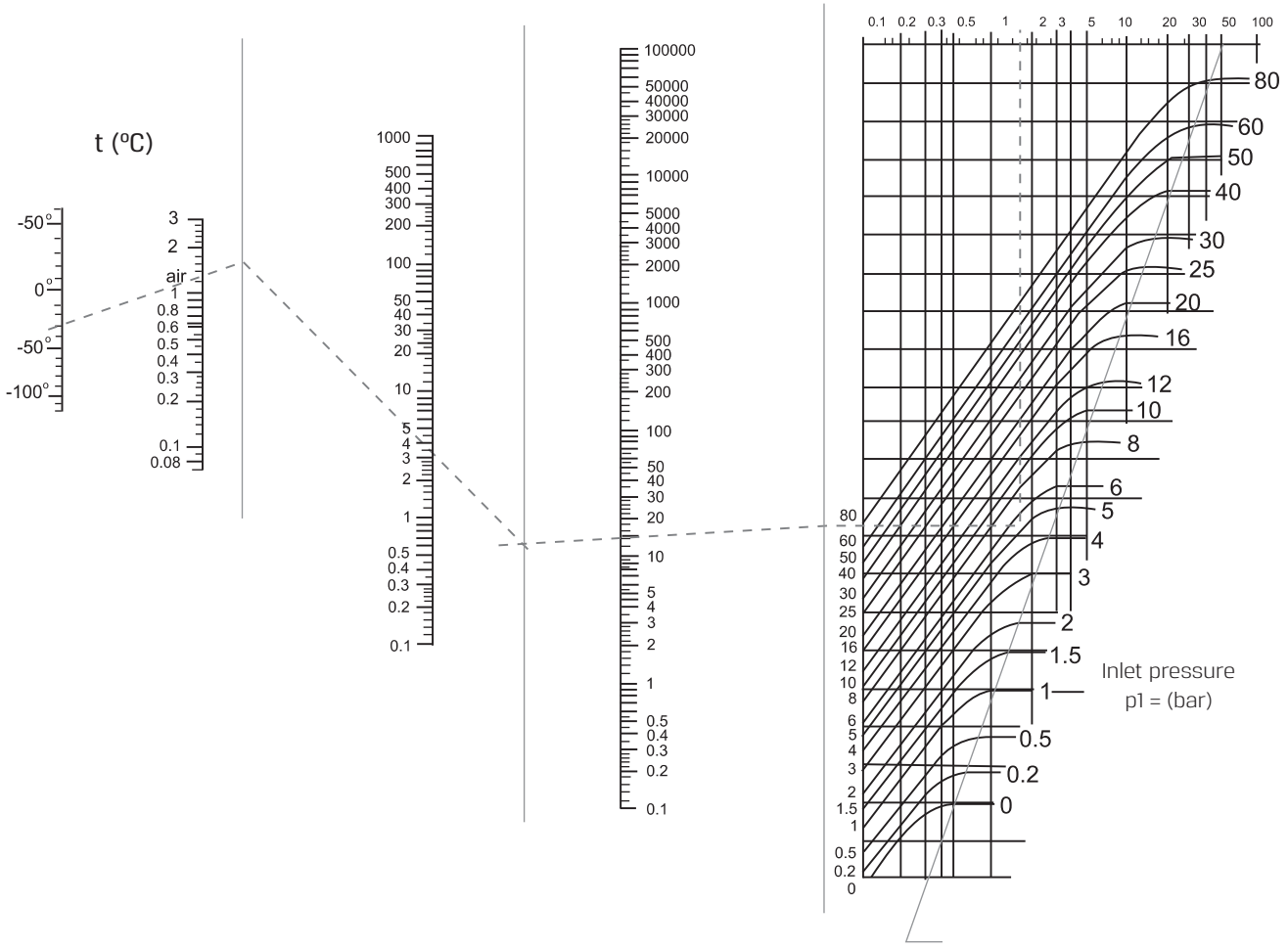
Flow Chart | Gases

Spec. gravity
γN (Kg/m³)

Flow factor
Kv

Flow rate
Q_N (Nm³/h)

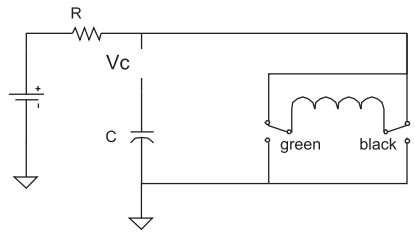
Pressure drop
$\triangle_p$ (bar)

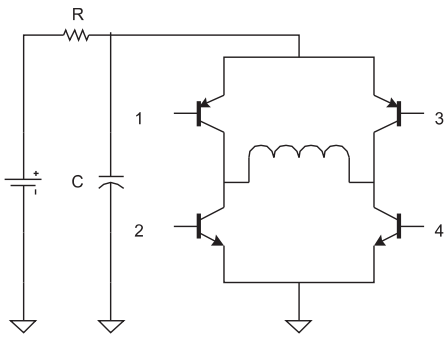


Q_N = ?	K_v = ?
t = 25	t = 25
γN = 1.3 (air)	γN = 1.3 (air)
K_v = 3	Q_N = 12
p1 = 5	p1 = 5
$\triangle_p$ = 1.8	$\triangle_p$ = 1.8
Q_N = 12 Nm³/h	**K_v = 3**

Operation Driver for Latch Coils

Non-direct operation with two switches (or four transistors)





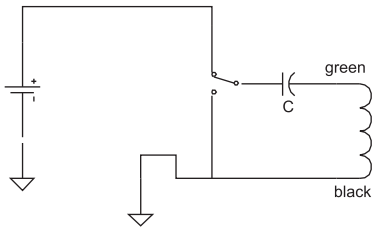
T_{vc} is the time to charge the capacitor. In order to reduce the time, use a similar resistor but never less than 100Ω.

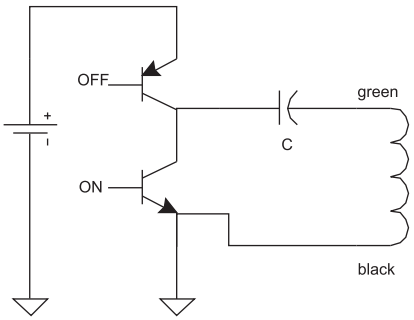
C = 4700µF

T_{vc} = 5 • R • C [sec]

$t_{on/off}$ = 30 ÷ 50 ms

Non-direct operation with one switch (or transistor)

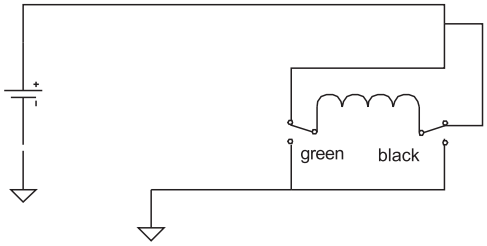


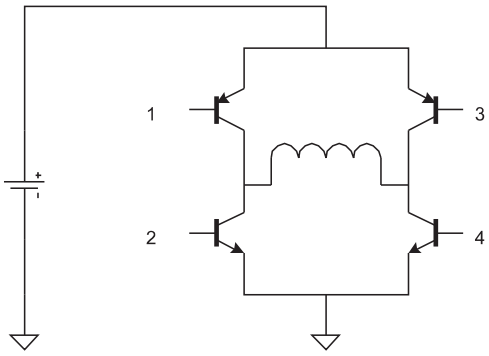


C = 4700µF

$t_{on/off}$ = 30 ÷ 50 ms

Direct operation





Conduits Sizing

GEM-SOL®

Wires cross-section selection for distance installation of GEM-SOL® solenoids

Solenoid type : GEM-SOL® 8W 24V AC					
No. of solenoids	1	2	3	4	Distance
Cross-section [mm²]	1.0	1.5	2.5	4.0	100m
	1.5	4.0	6.0	6.0	200m
	2.5	6.0			300m
	4.0	6.0			400m
	4.0				500m
	6.0				600m
	6.0				700m
	6.0				800m
					900m
					1000m

Max. conduits resistance 4Ω

Solenoid type : GEM-SOL® 5.5W 24V AC					
No. of solenoids	1	2	3	4	Distance
Cross-section [mm²]	0.75	1.5	2.5	2.5	100m
	1.5	2.5	4.0	6.0	200m
	2.5	4.0	6.0		300m
	2.5	6.0			400m
	4.0				500m
	4.0				600m
	6.0				700m
	6.0				800m
	6.0				900m
					1000m

Max. conduits resistance 5Ω

G75

Wires cross-section selection for distance installation of G75 solenoids

Solenoid type : G75 24V AC					
No. of solenoids	1	2	3	4	Distance
Cross-section [mm²]	0.5	0.5	0.75	1.0	100m
	0.5	1.0	1.5	2.5	200m
	0.75	1.5	2.5	2.5	300m
	1.0	2.5	2.5	4.0	400m
	1.5	2.5	4.0	6.0	500m
	1.5	4.0	4.0	6.0	600m
	2.5	4.0	6.0	6.0	700m
	2.5	4.0	6.0		800m
	2.5	4.0	6.0		900m
	2.5	6.0			1000m

Max. conduits resistance 15Ω

Solenoid type : G75 latch 4Ω					
No. of solenoids	1	2	3	4	Distance
Cross-section [mm²]	0.75	1.5	1.5	2.5	10m
	1.5	2.5	4.0	6.0	20m
	1.5	4.0	6.0	6.0	30m
	2.5	6.0	6.0		40m
	4.0	6.0			50m
	4.0				60m
	4.0				70m
	6.0				80m
	6.0				90m
	6.0				100m

Max. conduits resistance 0.6Ω

Long Distance Operators Charts

LDOS32 (LDOS) | Long distance operating solenoid

Number of solenoids that operate simultaneously as a function of wire cross-sectional [mm²] area and distance [mt] from energy source				
Distance in meters from energy source	WIRE CROSS-SECTIONAL AREA [mm²]			
	0.50	1.00	1.50	2.50
200	12	25	38	65
400	6	12	19	40
600	4	8	12	21
800	3	6	9	16
1,000	2	5	7	13
1,500	1	3	5	9
2,000	1	2	3	6
2,500	1	2	3	5
3,000		1	2	4
3,500		1	2	4
4,000		1	2	3
5,000		1	1	2
6,000			1	2
7,000			1	1
8,000			1	1
9,000				1
10,000				1

Wire's maximum resistance for one solenoid is 175Ω
For further technical information, please refer to product pages in Solenoid Valves | Special purpose section.

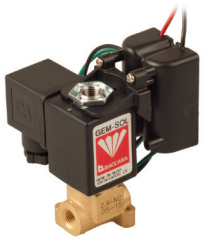
LDOS32 (LDOS) assembled with S32 (GEM-S) solenoid

G75-LDO | Long distance operator 2 Way, 3 Way NC, NO
LDO32 (GEM-LDO) | Long distance operator 2 Way, 3 Way NC, NO

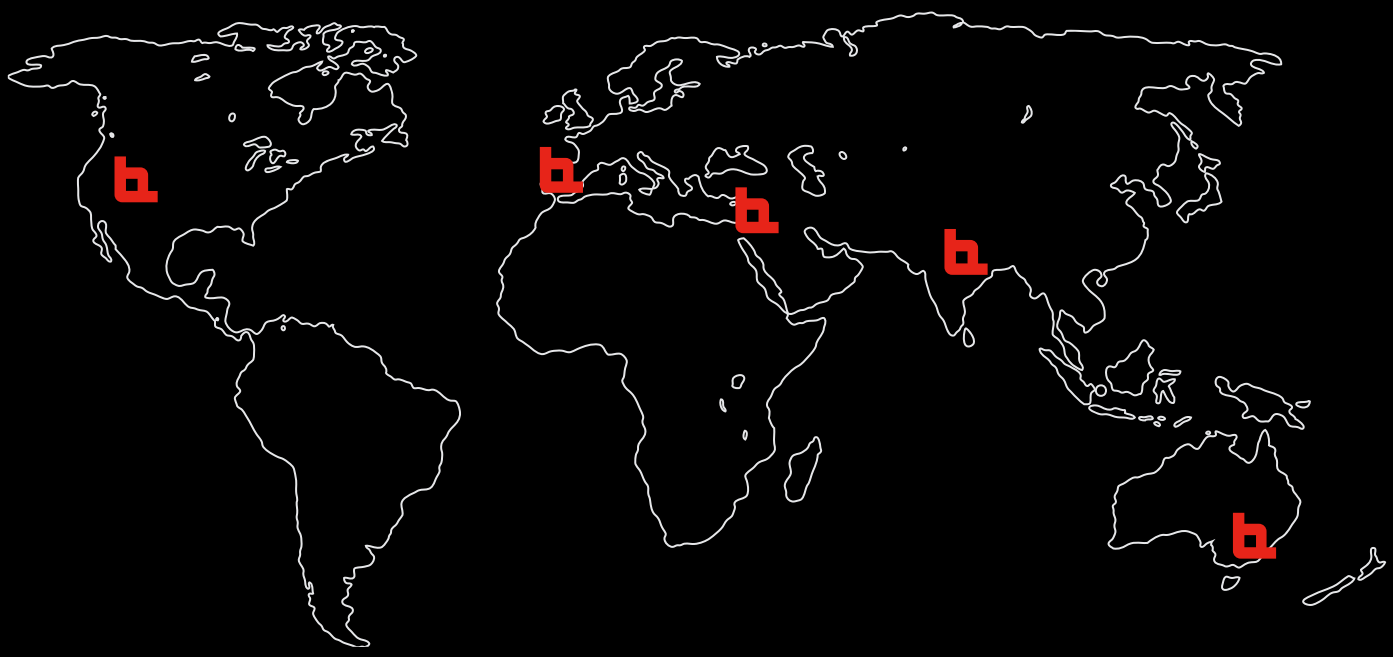
Number of solenoids that operate simultaneously as a function of wire cross-sectional [mm²] area and distance [mt] from energy source				
Distance in meters from energy source	WIRE CROSS-SECTIONAL AREA [mm²]			
	0.50	1.00	1.50	2.50
200	24	56	78	130
400	12	28	39	65
600	8	18	26	43
800	6	14	19	32
1,000	4	11	15	26
1,500	3	7	10	17
2,000	2	5	7	13
2,500	2	4	6	10
3,000	1	3	5	8
3,500	1	3	4	7
4,000	1	2	3	6
5,000	1	2	3	5
6,000		1	2	4
7,000		1	2	3
8,000		1	1	3
9,000		1	1	2
10,000		1	1	2

Wire's maximum resistance for one solenoid is 390Ω
For further technical information, please refer to product page in Solenoid Valves | Special purpose section.

G75-LDO | assembled with G75-A operator & solenoid



LDO32 (GEM-LDO) assembled with A32 (GEM-A) solenoid



BACCARA WORLD WIDE

BACCARA Corporate Headquarters
Kvutzat Geva, 1891500,
Israel
T. +972 4 653 5960
F. +972 4 653 1445
info@baccara-geva.com
www.baccara-geva.com

BACCARA Australia Pty. Ltd.
6 Jacks Road, Oakleigh South,
Victoria 3167,
Australia
T. +61 3 9570 2130
www.baccara-geva.com/australia/

Online Store: www.baccarastore.com.au

BACCARA Automation S.L.U.
Avenida De La Industria,
38, Nave A-15
28823 - Coslada (Madrid)
Spain
T. +34 91 344 6310
F. +34 91 344 6311
spain@baccara-geva.com
www.baccara-geva.com/es/

BACCARA USA
1312 W Stanford Avenue'
Englewood, CO 80110,
USA
T. +1 720 221 3221
info.us@baccara-geva.com
www.baccara-geva.com/usa/

BACCARA India
Empirical Business Center,
Office no. 405, Navale Icon,
Near Navale Bridge, off NH4, Narhe,
Pune, Pin-411041 Maharashtra
India
T. +91 91 685 27007
india@baccara-geva.com

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