QUEEN

SOLENOID VALVE

KUHNWAY

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QUEEN Solenoid Valves

INDEX

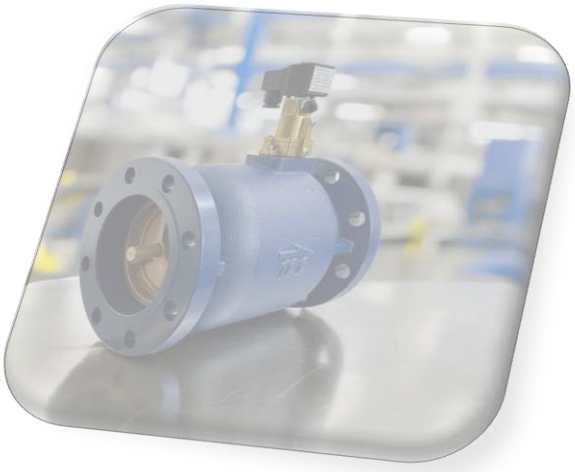
KUHNWAY

Normally Closed

Normally Open

Explosion proof

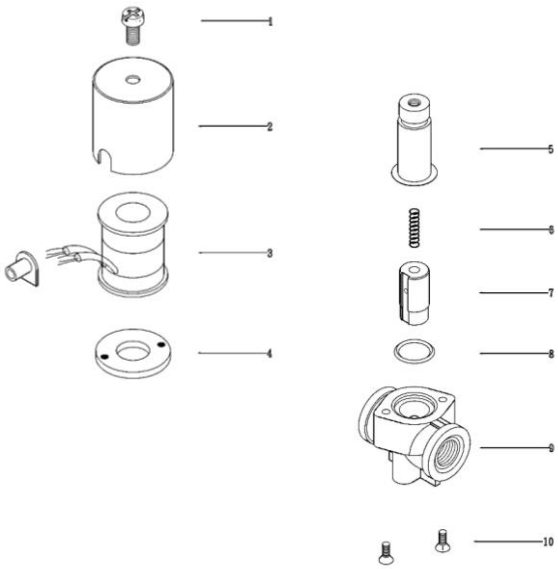
Appendix

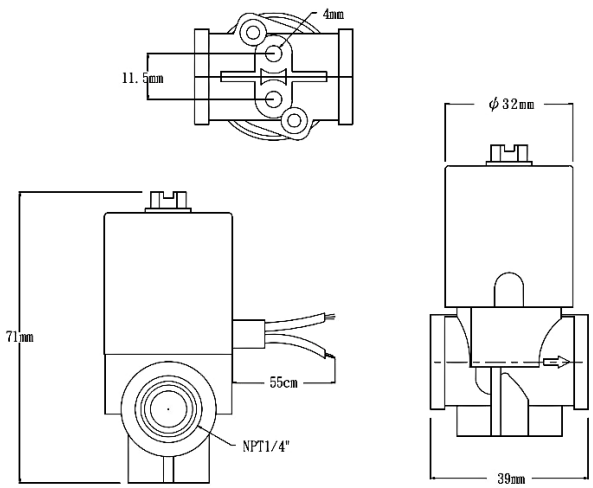


MS-NL | Direct-acting Type | N.C.

- Suitable for water and carbonated water, specifically designed for household reverse osmosis water filtration systems.
- Direct-acting two-way normally closed solenoid valve with fast operation and long service life.

Water





■ Main Parts List

NO.	Descriptions	Material
1.	Bolt	SWRM
2.	Coil bonnet	SPC
3.	Solenoid coil	B Class
4.	Spacer	SPC
5.	Plunger tube unit	SUS304 KM-31
6.	Spring	SUS 304
7.	Plunger	KM-31
8.	O ring	EPDM
9.	Valve body	NYLON 66
10.	Bolt	SUS 304

■ Common Specification

Item	Description
Fluid	Water
Fluid Temperature	Max 60˚C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	B Class = Max. 130˚C
Fluid Viscosity	-
Installation	Horizontal
Operation	Normally Closed
Coil type	Iron case type : IP54

■ Model Type

M S - 0 8 2 5 - 8 N L

Series Size

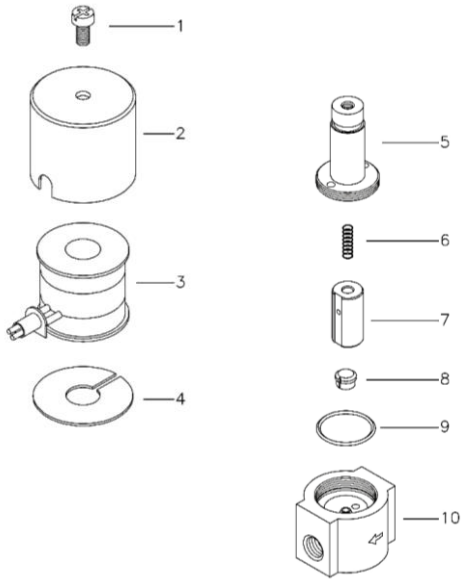
■ Valve Specification

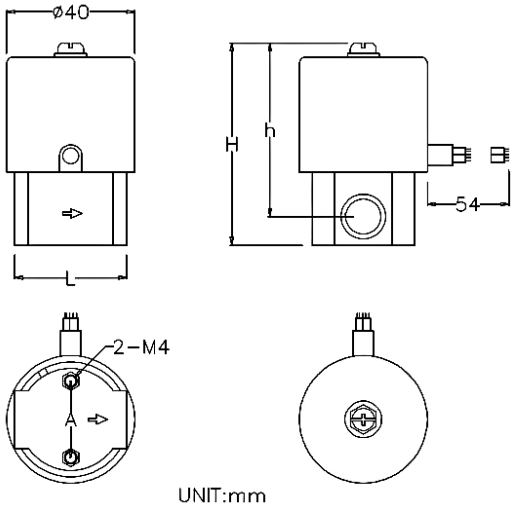
Model	Connection	Orifice (mm)	Pressure Range (kgf/cm²)	Cv Value	Weight (g)
MS-0825-8NL	NPT 1/4”	2.5	0-8	0.22	140

MK2-POM | Direct-acting Type | N.C.

- Suitable for water and carbonated water, specifically designed for household reverse osmosis water filtration systems.
- Normally closed direct-acting two-way solenoid valve with fast response and long service life.

Water





■ Main Parts List

NO.	Descriptions	Material
1.	Bolt	SWRM
2.	Coil bonnet	SPC
3.	Solenoid coil	B Class
4.	Spacer	SPC
5.	Plunger tube unit	SUS304, KM-31
6.	Spring	SUS 304
7.	Plunger	KM-31
8.	Plunger seat	EPDM
9.	O ring	EPDM
10.	Valve body	POM

■ Common Specification

Item	Description
Fluid	Water
Fluid Temperature	Max 60˚C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	B Class = Max. 130˚C
Power Consumption	15 VA
Fluid Viscosity	-
Installation	Horizontal / Vertical
Operation	Normally Closed
Coil type	Iron case type : IP54

■ Model Type

M K 2 - 0 8 2 5 - 8 P O M

Series Size

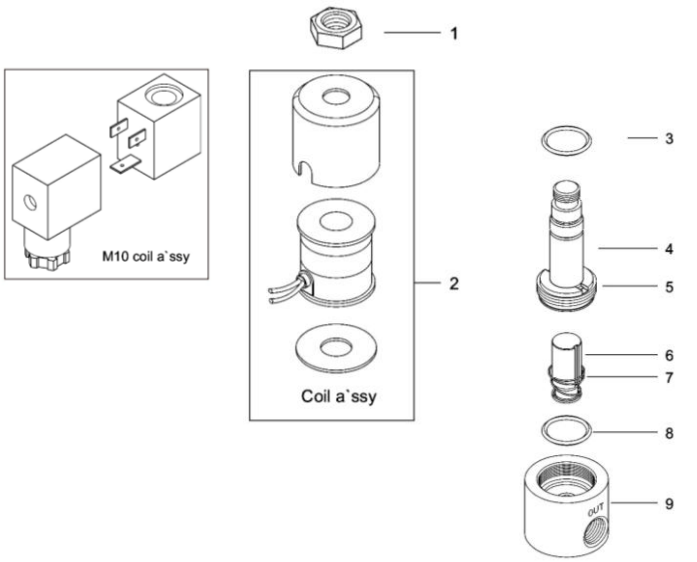
■ Valve Specification

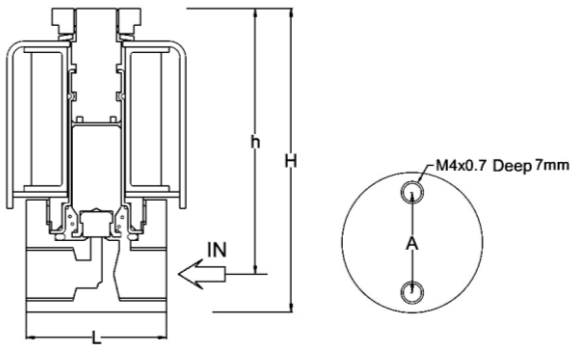
Model	Connection	Orifice (mm)	Pressure Range (kgf/cm²)	Cv Value	Dimensions (mm)			Mounting hole (mm)	
					L	H	h		
MK2-0825-8POM	NPT 1/4”	2.5	0-8	0.22	35	64	53	A = 24	2-M4

MK2-A6 series | Direct-acting Type | N.C.

- Suitable for air, inert gases, vacuum (10 Torr), water, kerosene, and oils with viscosity below 50 cst.
- Direct-acting design with a wide operating pressure range from 10 Torr to 20 kgf/cm², offering fast response and exceptional durability.

Air
Gas
Water
Oil





■ Main Parts List

NO.	Descriptions	Material
1.	Hexagon nut	SWRM
2.	Coil a'ssy	
3.	O ring	NBR
4.	Plunger tube unit	SUS304, KM-31
5.	Tube body	Zinc alloy
6.	Plunger	KM-31
7.	Plunger spring	SUS 304
8.	O ring	NBR
9.	Valve body	BSBF (* SUS 303L)

* SUS 303L on request

■ Common Specification

Item	Description
Fluid	Air, Gas, Vacuum, Water, Oil
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	5 VA
Fluid Viscosity	< 50 cst
Installation	Horizontal / Vertical
Operation	Normally Closed
Coil type	Iron case type : IP54 Waterproof coil : IP65

■ Model Type

M K 2 - A 2 0 1 5 - 6 - M 1 0 - L

- Series
- Pressure & Orifice
- Size
- N/A : Iron case
- M10 : Waterproof
- N/A : None
- L : LED (M10)

■ Valve Specification

Model	Connection	Orifice (mm)	Max. Pressure (kgf/cm²)		Cv Value	Dimensions (mm)			Mounting hole (mm)		Weight (g)
			Air	Water, Oil		L	H	h			
MK2-A2015-6	PT 1/8" (NPT 1/8")	1.5	20	15	0.04	25	54	49	A = 18	2-M4	130
MK2-A1020-6		2	10	7	0.07						155 (M10)
MK2-A0725-6		2.5	7	5	0.15						

MK2-8 series

Direct-acting Type

N.C.

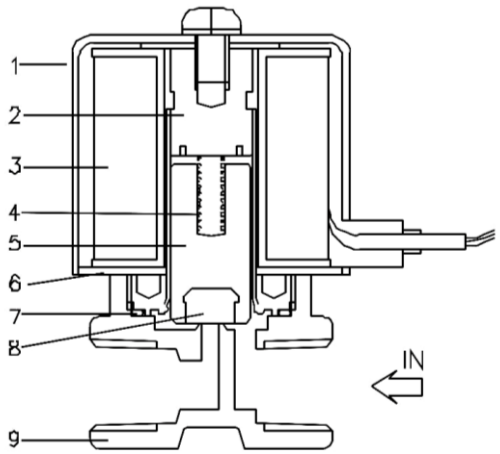
- Suitable for air, inert gases, vacuum (10 Torr), water, kerosene, and oils with viscosity below 50 cst.
- Normally closed direct-acting solenoid valve with an operating pressure range from 10 Torr to 30 kgf/cm², offering fast response and excellent durability.

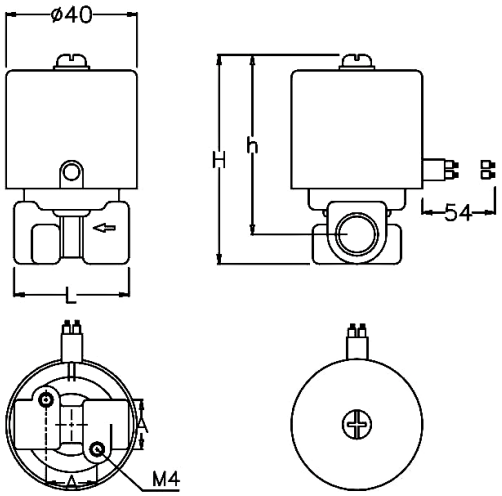
Air

Gas

Water

Oil





■ Main Parts List

NO.	Descriptions	Material
1.	Coil bonnet	SPC
2.	Plunger tube unit	SUS 304, KM-31
3.	Solenoid coil	B Class
4.	Plunger spring	SUS304
5.	Plunger	KM-31
6.	Spacer	SPC
7.	O ring	NBR
8.	Plunger seat	H NBR
9.	Valve body	BSBF (* SUS 303L)

* SUS 303L on request

■ Common Specification

Item	Description
Fluid	Air, Gas, Vacuum, Water, Oil
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	B Class = Max. 130°C
Power Consumption	15 VA
Fluid Viscosity	< 50 cst
Installation	Horizontal / Vertical
Operation	Normally Closed
Coil type	Iron case type : IP54 Waterproof coil : IP65

■ Model Type

MK2-3016-8-SCS13-M13-L

- Series
- Pressure & Orifice
- Size
- Valve Body
  - · N/A : BSBF
  - · SCS13 : SUS304
- Coil
  - · N/A : Iron case
  - · M13 : Waterproof
- N/A : None
- L : LED (M10)

■ Valve Specification

Model	Connection	Orifice (mm)	Max. Pressure (kgf/cm²)		Cv Value	Dimensions (mm)			Mounting hole (mm)		Weight (g)
			Air	Water, Oil		L	H	h			
MK2-3016-8	PT 1/4” (NPT 1/4”)	1.6	30	21	0.09	35	65	54	A = 18	2-M4	280
MK2-2020-8		2	20	14	0.15						
MK2-1030-8		3	10	7	0.25						
MK2-0445-8		4.5	4	2.5	0.35						

MK2A series

Direct-acting Type

N.C.

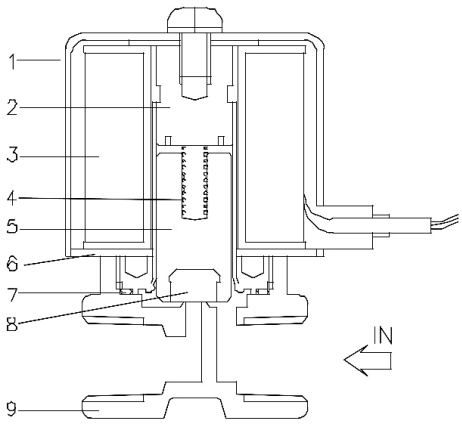
- Suitable for air, inert gases, vacuum (10 Torr), water, kerosene, and oils with viscosity below 50 cst.
- Normally closed direct-acting solenoid valve with an operating pressure range from 10 Torr to 50 kgf/cm², offering fast response and excellent durability.

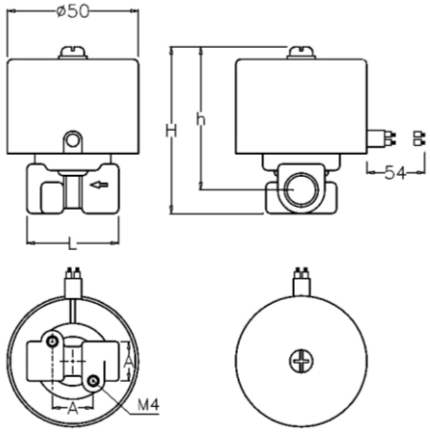
Water

Air

Gas

Oil





■ Main Parts List

NO.	Descriptions	Material
1.	Coil bonnet	SPC
2.	Plunger tube unit	SUS 304, KM-31
3.	Solenoid coil	B Class
4.	Plunger spring	SUS304
5.	Plunger	KM-31
6.	Spacer	SPC
7.	O ring	NBR
8.	Plunger seat	H NBR
9.	Valve body	BSBF (* SUS 303L)

* SUS 303L on request

■ Common Specification

Item	Description
Fluid	Air, Gas, Vacuum, Water, Oil
Fluid Temperature	-5 ~ 90˚C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	B Class = Max. 130˚C
Power Consumption	22 VA
Fluid Viscosity	< 50 cst
Installation	Horizontal / Vertical
Operation	Normally Closed
Coil type	Iron case type : IP54 Waterproof coil : IP65

■ Model Type

M K 2 A - 5 0 1 6 - □□ - S C S 1 3 - M 1 3 - L

- Series
- Pressure & Orifice
- Size · 8 (1/4") · 10 (3/8")
- Valve Body · N/A : BSBF · SCS13 : SUS304
- Coil · N/A : Iron case · M13 : Waterproof
- N/A : None L : LED (only for M10)

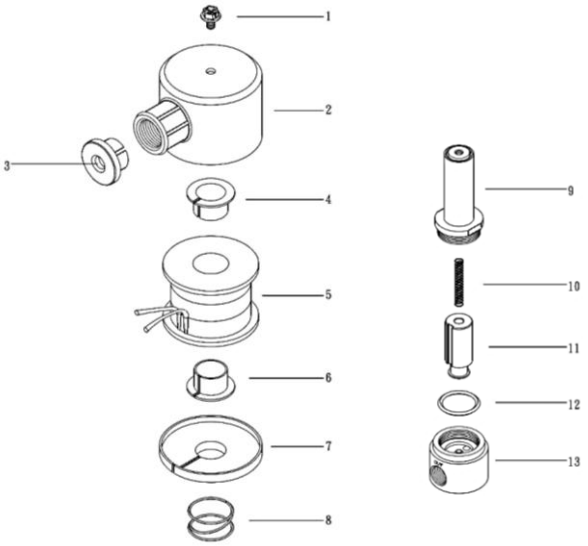
■ Valve Specification

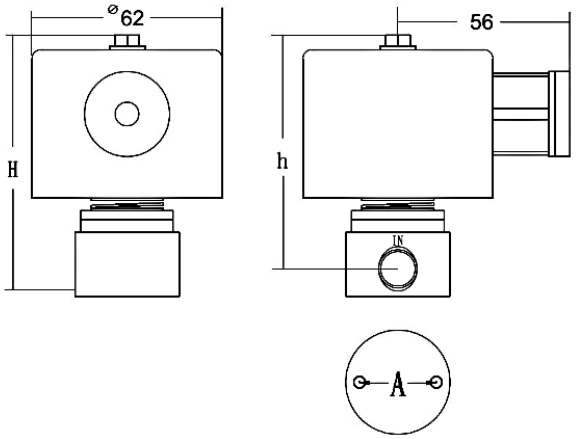
Model	Connection	Orifice (mm)	Max. Pressure (kgf/cm²)		Cv Value	Dimensions (mm)								Weight (g)	
						1/4"				3/8"				1/4"	3/8"
			Air	Water, Oil		L	H	h	A	L	H	h	A		
MK2A-5016-□□	1/4" or 3/8" (NPT or PT)	1.6	50	30	0.09	35	65	54	18 (2-M4)	42	67	56	24 (2-M5)	400	450
MK2A-4020-□□		2	30	25	0.15										
MK2A-2030-□□		3	20	14	0.25										
MK2A-1045-□□		4.5	10	7	0.35										

MK2B series | Direct-acting Type | N.C.

- Suitable for air, inert gases, vacuum (10 Torr), water, kerosene, and oils with viscosity below 50 cst.
- Normally closed direct-acting solenoid valve with an operating pressure range from 10 Torr to 100 kgf/cm², offering fast response and excellent durability.

Water
Air
Gas
Oil





■ Main Parts List

NO.	Descriptions	Material
1.	Hexagon bolt	SWRM
2.	Coil bonnet	SPC
3.	Lead Cap	ABS
4.	Bobbin sleeve	SPC
5.	Coil	B Class
6.	Bobbin sleeve	SPC
7.	Spacer	SPC
8.	Coil spring	SWP2
9.	Packless a'ssy	SUS304, KM-31
10.	Plunger spring	SUS 304
11.	Plunger	KM-31
12.	O ring	NBR
13.	Valve body	SUS 303L

* SUS 303L on request

■ Common Specification

Item	Description
Fluid	Air, Gas, Vacuum, Water, Oil
Fluid Temperature	0 ~ 90℃
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	B Class = Max. 130℃
Power Consumption	28 VA
Fluid Viscosity	< 50 cst
Installation	Horizontal / Vertical
Operation	Normally Closed
Coil type	Iron case type : IP54

■ Model Type

MK2B - 5030 - 8 - SCS13

- MK2B: Series
- 5030: Pressure & Orifice
- 8: Size · 8 (1/4")
- SCS13: Valve Body · SCS13 : SUS304

■ Valve Specification

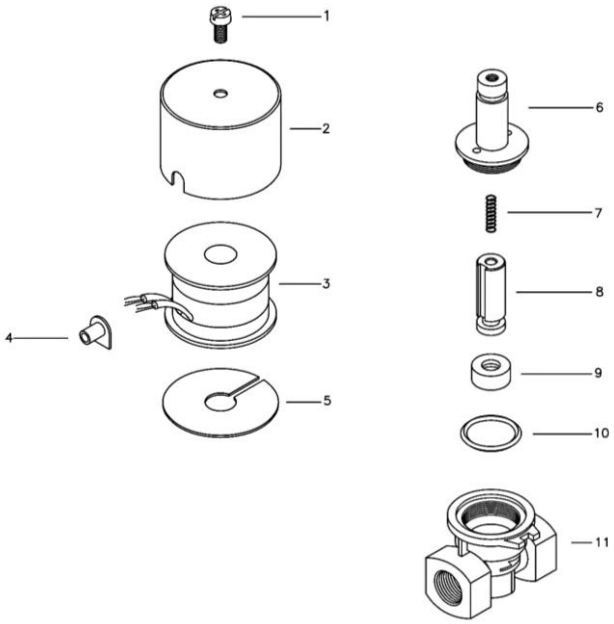
Model	Connection	Orifice (mm)	Max. Pressure (kgf/cm²)		Cv Value	Dimensions (mm)			Mounting hole (mm)	Weight (g)
			Air	Water, Oil		L	H	h		
MK2B-5030-8-SCS13	PT 1/4" (NPT)	3	50	40	0.35	34	85	76	A = 25 2-M4*0.8	800
MK2B-10020-8-SCS13		2	100	80	0.22					

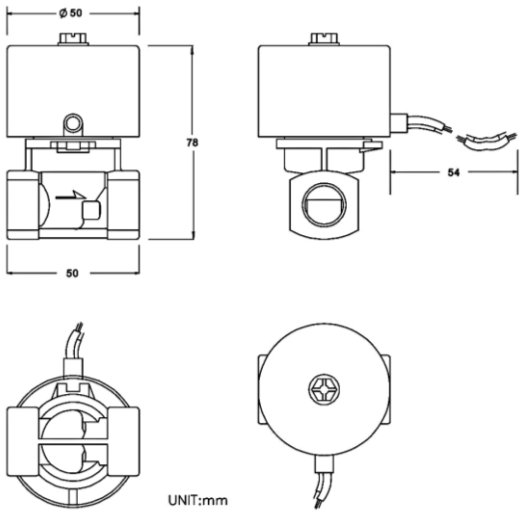
MG-10 | Direct-acting Type | N.C.

- Suitable for liquefied petroleum gas, low vacuum, and air.
- Normally closed direct-acting solenoid valve designed for low pressure and high flow.
- Operates directly in low-pressure conditions.

Vacuum

Gas





■ Main Parts List

NO.	Descriptions	Material
1.	Bolt	SWRM
2.	Coil bonnet	SPC
3.	Solenoid coil	B Class
4.	Lead collar	NBR
5.	Spacer	SPC
6.	Plunger tube set	SUS 304, KM-31
7.	Plunger spring	SUS 304
8.	Plunger	KM-31
9.	Plunger seat	H NBR, Silicon
10.	O ring	NBR
11.	Valve body	Zinc alloy

■ Common Specification

Item	Description
Fluid	LPG Gas, Vacuum
Fluid Temperature	0 ~ 60˚C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	B Class = Max. 130˚C
Power Consumption	22 VA
Fluid Viscosity	-
Installation	Vertical
Operation	Normally Closed
Coil type	Iron case type : IP54

■ Model Type

M G - 1 0

Series — Size · 10 (3/8")

■ Valve Specification

Model	Connection	Orifice (mm)	Max. Pressure (kgf/cm²)	Cv Value	Weight (g)
			LPG Gas		
MG-10	PT 3/8"	10	0 - 1	1.7	470

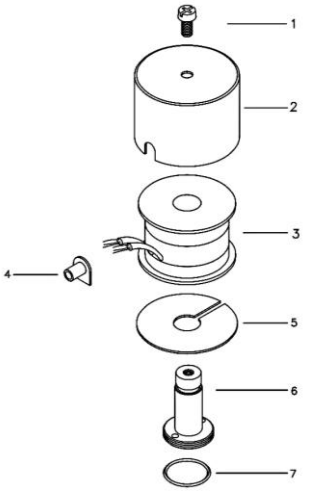
MA Series

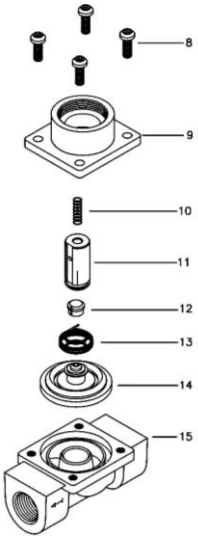
Semi Direct-acting Type

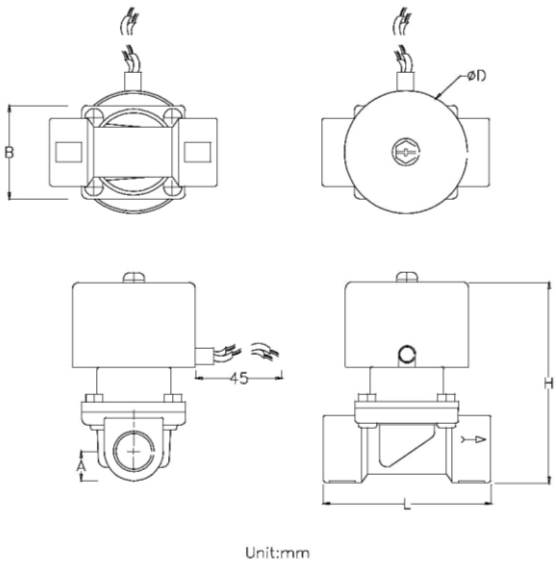
N.C.

- Suitable for air, inert gases, vacuum (10 Torr), water, kerosene oil, and oil (Below 50 cst).
- Diaphragm-operated pressure range from vacuum (10 Torr) up to 10 kgf/cm², quick acting.
- Can be mounted in vertical and horizontal position.

Water
Air
Gas
Oil







Unit:mm

■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Bolt	SWRM	9.	Valve bonnet	C3771BE
2.	Coil bonnet	SPC	10.	Plunger spring	SUS304
3.	Solenoid coil	B Class	11.	Plunger	KM-31
4.	Lead collar	NBR	12.	Plunger seat	H NBR (EPDM)
5.	Spacer	SPC	13.	Spring	SUS304
6.	Plunger tube set	SUS 304, KM-31	14.	Diaphragm a'ssy	SUS 304, BSBF
7.	O ring	NBR (EPDM)	15.	Diaphragm a'ssy	H NBR (EPDM)
8.	Bolt	SUS304	16.	Valve body	C3771BE

■ Common Specification

Item	Description
Fluid	Water, Air, Gas, Oil
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V * AC110 / DC24V common use
Power Consumption	DC : 18W AC : 22 VA DC : 9W AC : 14 VA (M13 Coil)
Fluid Viscosity	< 50 cst
Installation	Vertical / Horizontal
Operation	Normally Closed
Coil type	Iron case type : IP54 Waterproof : IP65

■ Model Type

M A - □□ - U EP - M13 - L

- Series
- Size · 10 (3/8") · 15 (1/2")
- Pressure range (kgf/cm²) · N/A : 0-10 · H : 0-15 · U : 0-20
- Diaphragm · N/A : NBR · EP : EPDM · V : VITON
- Coil · N/A : Iron case · M13 : Waterproof
- N/A : None L : LED (only for M13)

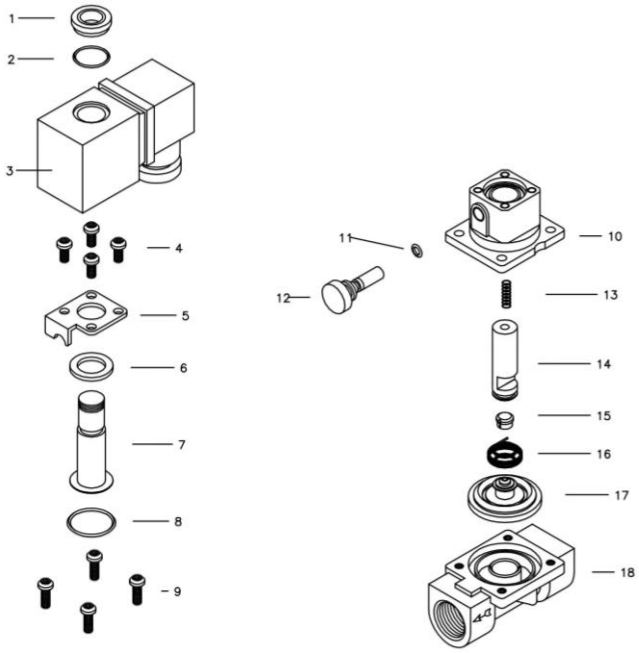
■ Valve Specification

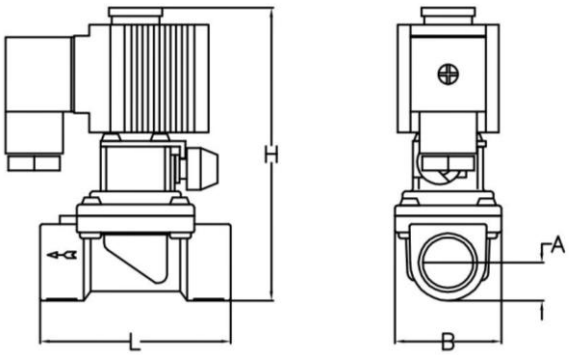
Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Leakage	Dimension (mm)					Weight (g)
				Air, Inert gases, Water	Oil (< 50 cst)		L	H	A	D	B	
MA-10	PT 3/8"	12	2.4	0 - 10	0 - 7	> 0.1 kgf/cm² 0 cc/min	68	87	13.5	Ø50	42	655
MA-15	PT 1/2"		1.6 (M13)			≤ 0.1 kgf/cm² 2 cc/min						

MA-BFE Series | Semi Direct-acting Type | N.C.

- Solenoid valve with manual knob, allowing valve operation during power outages.
- Diaphragm-type solenoid valve with high flow capacity.
- Suitable for various fluids such as air, inert gases, water, kerosene, and oil (below 50 cst).

Water **Air** **Gas** **Oil**





■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Nut	Aluminum	10.	Valve bonnet	BSBF
2.	O ring	NBR	11.	O ring	NBR
3.	IP 65 Molding coil		12.	Manual button	AMC
4.	Bolt	SS304	13.	Spring	SUS304
5.	Plate	SPC	14.	Plunger	KM-31
6.	Washer	SPC	15.	Plunger seat	Viton
7.	Plunger tube unit	SUS304, KM-31	16.	Spring	SUS304
8.	O ring	NBR	17.	Diaphragm a'ssy	NBR or EPDM or Viton
9.	Bolt	SUS304	18.	Valve body	BSBF

■ Common Specification

Item	Description
Fluid	Water, Air, Gas, Oil
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	DC : 21W AC : 20 VA
Fluid Viscosity	< 50 cst
Installation	Vertical / Horizontal
Operation	Normally Closed
Coil type	Waterproof : IP65

■ Model Type

M A - □□ BFE - EP - M13 - L

- Series
- Size · 10 (3/8") · 15 (1/2")
- Diaphragm · N/A : NBR · EP : EPDM · V : VITON
- Coil · N/A : Iron case · M13 : Waterproof
- N/A : None L : LED (only for M13)

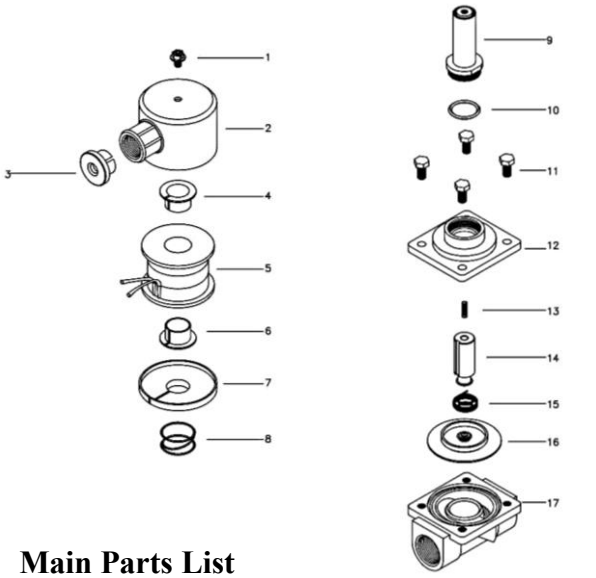
■ Valve Specification

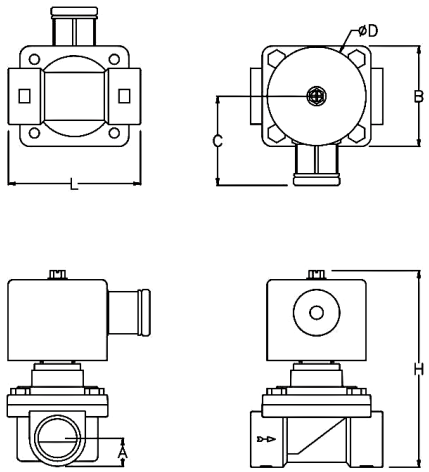
Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)	Dimension (mm)				Weight (g)
					L	H	B	A	
MA-10BFE-M13	PT 3/8"	12	2.6	0 - 10	69	105	38	13.5	620
MA-15BFE-M13	PT 1/2"								

MD Series | Semi Direct-acting Type | N.C.

- Suitable for air, inert gases, vacuum (10 Torr), water, kerosene oil, and oil (Below 50 cst).
- Semi direct-acting diaphragm type solenoid valve, operating pressure range from vacuum (10 Torr) up to 10 kgf/cm², quick acting.
- Can be mounted in vertical and horizontal position

Water **Air** **Gas** **Oil**





■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Bolt	SWRM	10.	O ring	NBR
2.	Coil bonnet	SPC	11.	Bolt	SUS304
3.	Lead cap	ABS	12.	Valve bonnet	3/8"~1" (C3771BE) 1-1/4"~2" (BC6) ½"~2" (SCS13/SCS14)
4.	Bobbin sleeve	SPC	13.	Plunger spring	SUS304
5.	Solenoid coil	B Class	14.	Plunger	KM-31
6.	Bobbin sleeve	SPC	15.	Spring	SUS304
7.	Spacer	SPC	16.	Diaphragm a'ssy	SUS304, BSBF(SUS304) NBR (EPDM) (Viton)
8.	Coil spring	SWP2	17.	Valve body	3/8"~1" (C3771BE) 1-1/4"~2" (BC6) ½"~2" (SCS13/SCS14)
9.	Plunger tube unit	SUS304, KM-31			

■ Common Specification

Item	Description
Fluid	Water, Air, Gas, Oil
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	B Class = Max. 130°C
Power Consumption	DC : 21W AC : 26 VA
Fluid Viscosity	< 50 cst
Installation	Vertical / Horizontal
Operation	Normally Closed
Coil type	Iron case type : IP54 Waterproof : IP65

■ Model Type

M D - □□ WAG H - SCS13 - EP - M16 - L

Series

- N/A : None L : LED (only for M16)
- Coil · N/A : Iron case · M16 : Waterproof
- Diaphragm · N/A : NBR · EP : EPDM · V : VITON
- Body material · N/A : Brass · SCS13 : SUS304 · SCS14 : SUS316
- Pressure range (kgf/cm²) · N/A : 0-10 · H : 0-15 · U : 0-20
- Media · W : Water · A : Oil · G : Gas
- Size (PT or NPT) · 10 (3/8") · 15 (1/2") · 20 (3/4") · 25 (1") · 32 (1-1/4") · 40 (1-1/2") · 50 (2")

■ Valve Specification

Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Dimension (mm)						Weight (g)
				Air, Water Inert gases	Oil (< 50cst)	L	H	A	B	C	D	
MD-10WAG	PT 3/8"	16	3.7	0 – 10	0-7	70	112	15	52	56	Ø62	1030
MD-15WAG	PT 1/2"	16	3.7			70	112	15	52			1030
MD-20WAG	PT 3/4"	23	6.3			80	122	17.5	62			1245
MD-25WAG	PT 1"	28	8			90	132	23	72			1620
MD-32WAG	PT 1 1/4"	32	13			120	130	26	83			2420
MD-40WAG	PT 1 1/2"	40	20.3			136	140	32	97			3330
MD-50WAG	PT 2"	50	32			160	150	37	112			4520

MD (M16) Series

Semi Direct-acting Type

N.C.

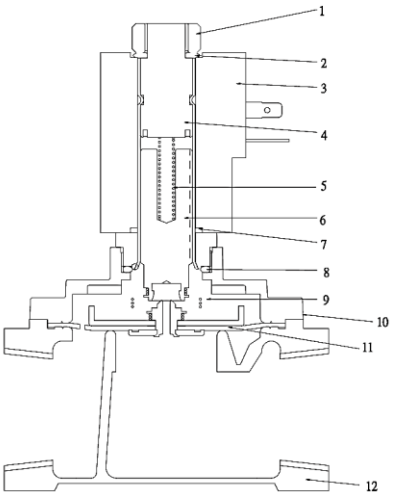
- Suitable for air, inert gases, vacuum (10 Torr), water, kerosene oil, and oil (Below 50 cst).
- Semi direct-acting diaphragm type solenoid valve, operating pressure range from vacuum (10 Torr) up to 10 kgf/cm², quick acting.
- Can be mounted in vertical and horizontal position

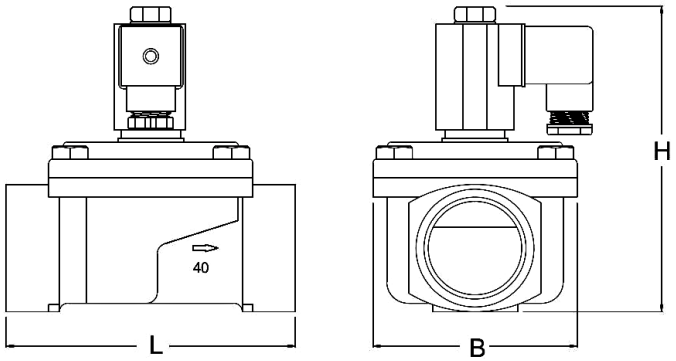
Water

Air

Gas

Oil





■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	NUT	Aluminium	7.	O ring	NBR
2.	O ring	NBR	8.	O ring	NBR
3.	IP 65 molding coil		9.	Spring	SUS304
4.	Packless a'ssy	SUS304, KM-31	10.	Valve bonnet	3/8"~1" (C3771BE) 1-1/4"~2" (BC6) ½"~2" (SCS13/SCS14)
5.	Plunger spring	SUS304	11.	Diaphragm a'ssy	SUS304, BSBF(SUS304) NBR (EPDM) (Viton)
6.	Plunger	KM-31	12.	Valve body	3/8"~1" (C3771BE) 1-1/4"~2" (BC6) ½"~2" (SCS13/SCS14)

■ Common Specification

Item	Description
Fluid	Water, Air, Gas, Oil
Fluid Temperature	-5 ~ 90˚C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	DC : 26W AC : 35 VA
Fluid Viscosity	< 50 cst
Installation	Vertical / Horizontal
Operation	Normally Closed
Coil type	Waterproof : IP65

■ Model Type

M D - □□ WAG H - SCS13 - EP - M16 - L

Series

- N/A : None L : LED (only for M16)
- Coil · N/A : Iron case · M16 : Waterproof
- Diaphragm · N/A : NBR · EP : EPDM · V : VITON
- Body material · N/A : Brass · SCS13 : SUS304 · SCS14 : SUS316
- Pressure range (kgf/cm²) · N/A : 0-10 · H : 0-15 · U : 0-20
- Media · W : Water · A : Oil · G : Gas
- Size (PT or NPT) · 10 (3/8") · 15 (1/2") · 20 (3/4") · 25 (1") · 32 (1-1/4") · 40 (1-1/2") · 50 (2")

■ Valve Specification

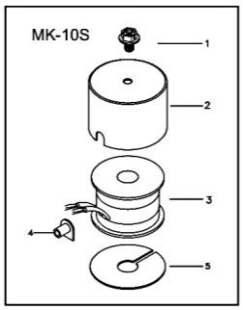
Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Dimension (mm)			Weight (g)
				Air, Water Inert gases	Oil (< 50cst)	H	L	B	
MD-10WAG-M16	PT 3/8"	16	3.7	0 – 10	0-7	80	70	57	860
MD-15WAG-M16	PT 1/2"	16	3.7			80	70	57	860
MD-20WAG-M16	PT 3/4"	23	6.3			90	80	65	1095
MD-25WAG-M16	PT 1"	28	8			100	90	74	1470
MD-32WAG-M16	PT 1 1/4"	32	13			136	120	83	2270
MD-40WAG-M16	PT 1 1/2"	40	20.3			146	136	97	3180
MD-50WAG-M16	PT 2"	50	32			156	160	113	4365

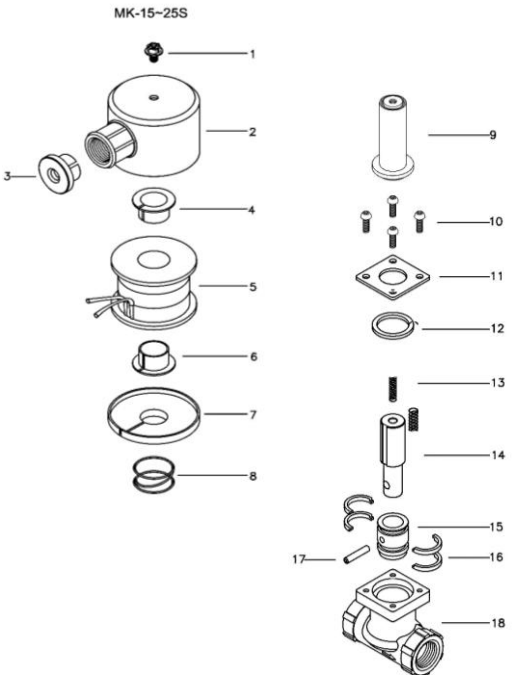
* Operating Pressure is 0 - 8 kgf/cm² for M16-DC24V

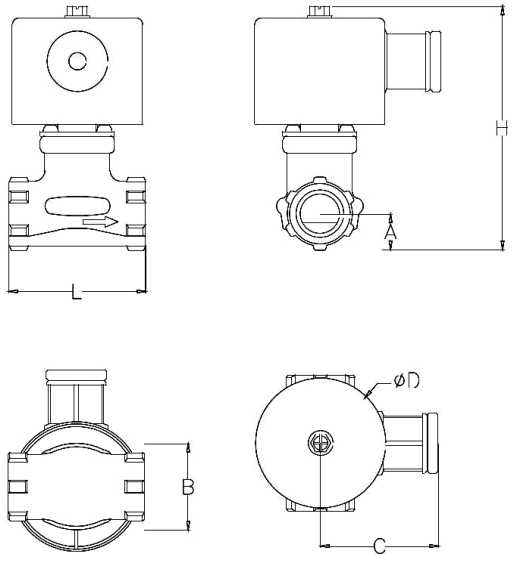
MK Series | Semi Direct-acting Type | N.C.

- Suitable for steam, air, vacuum, inert gases, water, and oil (Below 50 cst).
- Semi-direct acting solenoid valve, wide operating pressure range from 10 Torr to 10 kgf/cm²,fast response, long life constructive device.
- Can be mounted in horizontal position or horizontal ±15° is allowed.
- Fluid temperature from -10 ˚C (non-freezing) to 180 ˚C.

Steam | Water | Air | Gas | Oil







■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Hexagon	SWRM	10.	Bolt	SUS304
2.	Coil bonnet	SPC	11.	Plate	SPC
3.	Lead cap	ABS	12.	Packing	TEFLON
4.	Bobbin sleeve	SPC	13.	Plunger spring	SUS304
5.	Solenoid coil	H Class	14.	Plunger	KM-31
6.	Bobbin sleeve	SPC	15.	Main valve	BC 6
7.	Spacer	SPC	16.	Piston ring	TEFLON
8.	Coil spring	SWP2	17.	Sleeve pin	SUS 303L
9.	Plunger tube unit	SUS304, KM-31	18.	Valve body	BC 6

■ Common Specification

Item	Description
Fluid	Steam, Water, Air, Gas, Oil
Fluid Temperature	-10 ~ 180˚C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	H Class = Max. 180˚C
Power Consumption	26 VA (22 VA for MK-10S)
Fluid Viscosity	< 50 cst
Installation	Vertical
Operation	Normally Closed
Coil type	Iron case : IP54

■ Model Type

M K - □□ S

Series Size · 10 (3/8") · 15 (1/2") · 20 (3/4") · 25 (1")

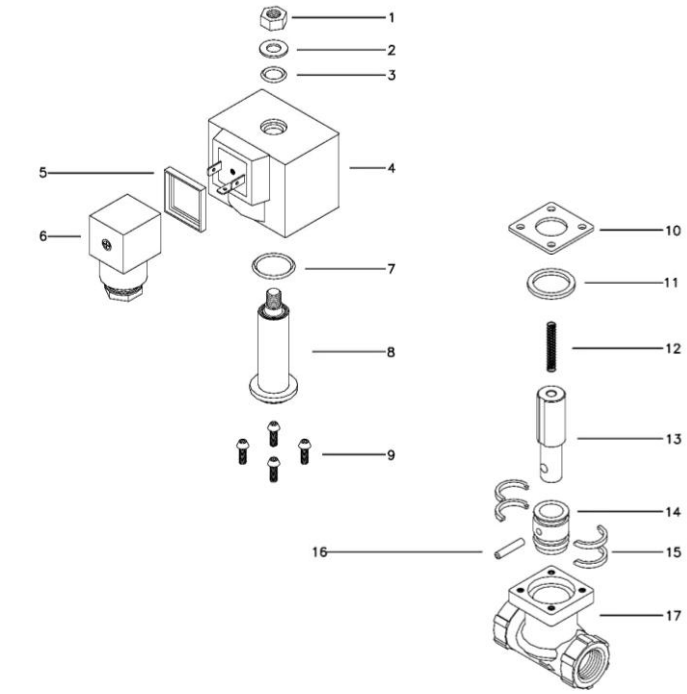
■ Valve Specification

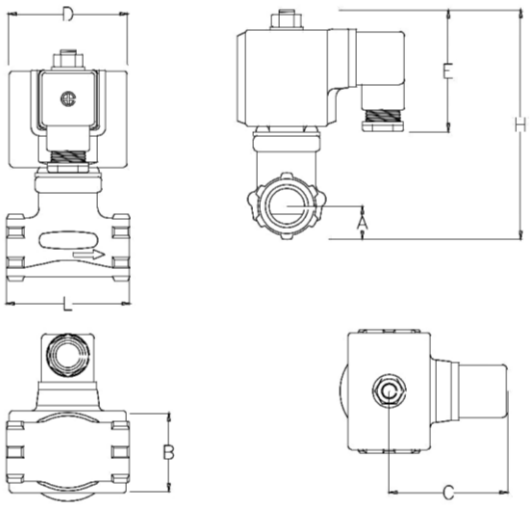
Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)			Dimension (mm)						Weight (g)
				Steam	Water	Oil (< 50cst)	L	H	A	B	C	ØD	
MK-10S	PT 3/8"	10	1.3	0 - 10	0 - 8	0 - 7	53	90	13	24		50	800
MK-15S	PT 1/2"	14	3.0				63	114	17	30			950
MK-20S	PT 3/4"	19	4.9				74	122	19	33	56	62	1200
MK-25S	PT 1"	25	6.2				88	127	24	41			1470

MK (M17) Series | Semi Direct-acting Type | N.C.

- Suitable for steam, air, vacuum, inert gases, water, and oil (Below 50 cst).
- Semi-direct acting solenoid valve, wide operating pressure range from 10 Torr to 10 kgf/cm²,fast response, long life constructive device.
- Can be mounted in horizontal position or horizontal ±15° is allowed.
- Fluid temperature from -10 ˚C (non-freezing) to 180 ˚C.
- Valve seat : non-leakage

Steam | Water | Air | Gas | Oil





■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Hexagon Nut	BSBM	10.	Plate	SPC
2.	Washer	SPC	11.	Packing	TEFLON
3.	O ring	NBR	12.	Plunger spring	SUS304
4.	Bobbin sleeve	SPC	13.	Plunger	KM-31
5.	H Class IP65 molding solenoid coil		14.	Main valve	BC 6
6.	Terminal box		15.	Piston ring	TEFLON
7.	O ring	NBR	16.	Sleeve pin	SUS 303L
8.	Plunger tube unit	SUS304, KM-31	17.	Valve body	BC 6
9.	Bolt	SUS304			

■ Common Specification

Item	Description
Fluid	Steam, Water, Air, Gas, Oil
Fluid Temperature	-10 ~ 180˚C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	H Class = Max. 180˚C
Power Consumption	26 VA
Fluid Viscosity	< 50 cst
Installation	Vertical
Operation	Normally Closed
Coil type	Waterproof : IP65

■ Model Type

M K - □□ S - M17

Series Size · 10 (3/8") · 15 (1/2") · 20 (3/4") · 25 (1")

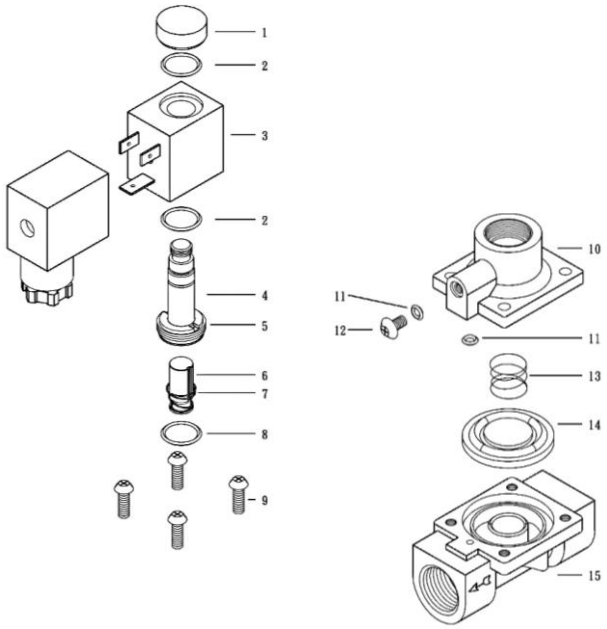
■ Valve Specification

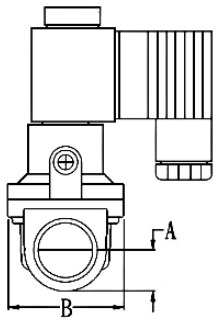
Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)			Dimension (mm)						
				Steam	Water	Oil (< 50cst)	L	H	A	B	C	D	E
MK-15S-M17	PT 1/2"	14	3.0	0 - 10	0 - 8	0 - 7	63	120	17	30	65	60	60
MK-20S-M17	PT 3/4"	19	4.9				74	128	19	33			
MK-25S-M17	PT 1"	25	6.2				88	133	24	41			

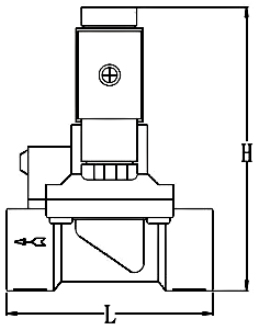
MA-P Series | Pilot-operated Type | N.C.

- Pilot Operated solenoid valve with large flow capacity and low power consumption, only 5 watts.
- Suitable for air, inert gases, water, kerosene, and light oils (below 50 cst).
- Operating pressure range from 0.1 kgf/cm² to 16 kgf/cm², offering fast action and excellent durability.

Water
Air
Gas
Oil







■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Nut	Aluminum	9.	Bolt	SUS304
2.	O ring	NBR	10.	Valve bonnet	BSBF or SCS14
3.	IP 65 Molding coil		11.	O ring	NBR EPDM Viton
4.	Plunger's Tube	SS304, KM-31	12.	Screw	SUS304
5.	Plunger's Tube Nut	Zn	13.	Diaphragm spring	SUS304
6.	Plunger	KM-31	14.	Diaphragm	NBR EPDM Viton
7.	Plunger spring	SUS304	15.	Valve body	BSBF or SCS14
8.	O ring	NBR EPDM Viton			

■ Common Specification

Item	Description
Fluid	Water, Air, Gas, Oil
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	5W
Fluid Viscosity	< 50 cst
Installation	Vertical / Horizontal
Operation	Normally Closed
Coil type	Waterproof : IP65

■ Model Type

M A - P □□ - EP - M10 - L

Series

- Size · 10 (3/8") · 15 (1/2")
- Diaphragm · N/A : NBR · EP : EPDM · V : VITON
- Coil · N/A : Iron case · M10 : Waterproof
- N/A : None L : LED (only for M10)

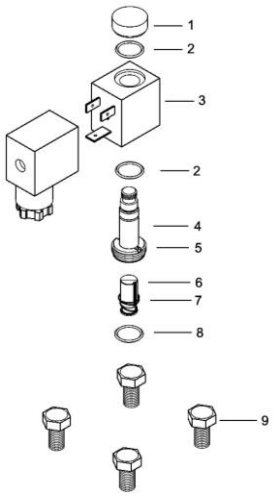
■ Valve Specification

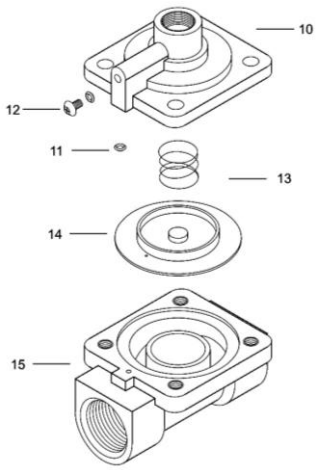
Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Dimension (mm)				Weight (g)
				Inert Gases	Water, Oil	L	H	B	A	
MA-P10-M10	PT 3/8"	12	2.6	0.1 – 16	0.1 - 15	69	92	38	13.5	430
MA-P15-M10	PT 1/2"									

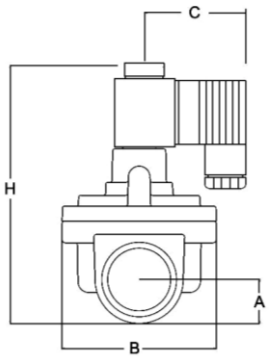
MD-P Series | Pilot-operated Type | N.C.

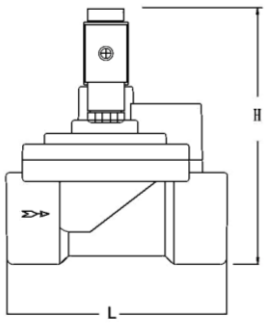
- Pilot operated diaphragm solenoid valve, featuring high flow capacity and low power consumption (only 5.2 watts).
- Suitable for Air, Inert gases, Water, Kerosene oil, Light oil (Below 50 cst).
- Operating pressure range from 0.3 kgf/cm² ~ 16 kgf/cm², quick acting, durable usage.

Water
Air
Gas
Oil









■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Nut	Aluminum	9.	Bolt	SUS304
2.	O ring	NBR	10.	Valve bonnet	BSBF
3.	IP 65 Molding coil		11.	O ring	NBR EPDM Viton
4.	Plunger's Tube	SS304, KM-31	12.	Screw	SUS304
5.	Plunger's Tube Nut	Zn	13.	Diaphragm spring	SUS304
6.	Plunger	KM-31	14.	Diaphragm	NBR EPDM Viton
7.	Plunger spring	SUS304	15.	Valve body	BSBF
8.	O ring	NBR EPDM Viton			

■ Common Specification

Item	Description
Fluid	Water, Air, Gas, Oil
Fluid Temperature	-5 ~ 90˚C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	5W
Fluid Viscosity	< 50 cst
Installation	Vertical / Horizontal
Operation	Normally Closed
Coil type	Waterproof : IP65

■ Model Type

M D - P □□ WAG - EP - M10 - L

- Series
- Size · 10 (3/8") · 15 (1/2") · 20 (3/4") · 25 (1")
- Media · W : Water · A : Oil · G : Gas
- Diaphragm · N/A : NBR · EP : EPDM · V : VITON
- Coil · N/A : Iron case · M10 : Waterproof
- N/A : None L : LED (only for M10)

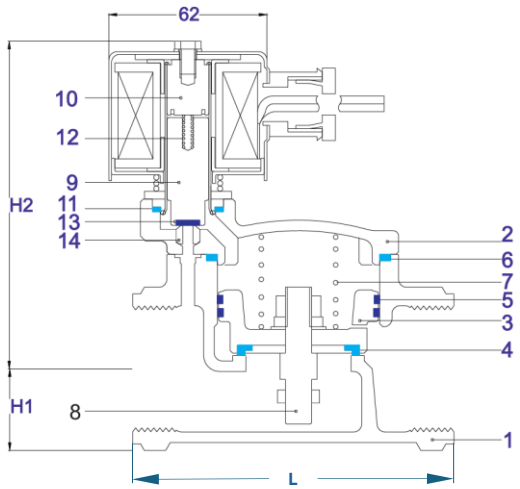
■ Valve Specification

Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)			Dimension (mm)				
				Air, Gas	Water	Oil (< 50cst)	L	H	B	A	C
MD-P10WAG-M10	PT 3/8"	16	4.5	0.3-16	0.5-16	0.5-12	80	98	15	52	50
MD-P15WAG-M10	PT 1/2"	16	4.5				80	98	15	52	
MD-P20WAG-M10	PT 3/4"	23	7.6				90	108	17.5	62	
MD-P25WAG-M10	PT 1"	28	9.6				100	118	23	72	

MT Series | Pilot-operated Type | N.C.

- Suitable for steam, air, inert gases, water, and oil (Below 50 cst).
- Can be mounted in vertical and horizontal position.
- Maximum working temperature up to 200 ˚C.

Steam
Water
Air
Gas
Oil



■ Common Specification

Item	Description	
Fluid	Water, Air, Gas, Oil	Steam
Fluid Temperature	Max. 90˚C	Max. 200˚C
Power Source	AC 24, 110, 220 50/60Hz DC 12, 24V	
Insulation Class	F Class = Max. 150˚C	H Class = Max. 180˚C
Power Consumption	AC : 35 VA DC : 26W	
Fluid Viscosity	< 50 cst	
Installation	Vertical / Horizontal	
Operation	Normally Closed	
Coil type	Iron case : IP54	

■ Main Parts List

NO.	Descriptions	Material	
		Max. 90˚C	Max. 200˚C
1.	Valve body	BC6	BC6
2.	Valve bonnet	BC6	BC6
3.	Main valve	BC6	BC6
4.	Main valve seat	Teflon	Teflon
5.	Main valve ring	Carbon Resin	Carbon Resin
6.	Packing	NBR	Teflon
7.	Spring	SUS304	SUS304

NO.	Descriptions	Material	
		Max. 90˚C	Max. 200˚C
8.	Main valve guide rod	SUS303L	SUS303L
9.	Plunger	KM-31	KM-31
10.	Plunger tube unit	SUS304,KM-31	SUS304,KM-31
11.	Packing	NBR	Teflon
12.	Spring	SUS304	SUS304
13.	Plunger Seat	Viton	Teflon
14.	Pilot hole seat	SUS303L	SUS303L

■ Model Type

M T - □□ F W A G S H C - M17

Series

- Coil · N/A : Iron case · M17 : Waterproof
- Operation · N/A : Normally closed · C : Normally open
- Max. Pressure (kgf/cm²) · N/A : 10 · H : Steam = 16 ; Other = 20
- Media · W : Water · A : Oil · G : Gas · S : Steam
- Connection · N/A : Screw · F : Flange (10K)
- Size · 15 (1/2") · 20 (3/4") · 25 (1") · 32 (1-1/4") · 40 (1-1/2") · 50 (2")

■ Valve Specification

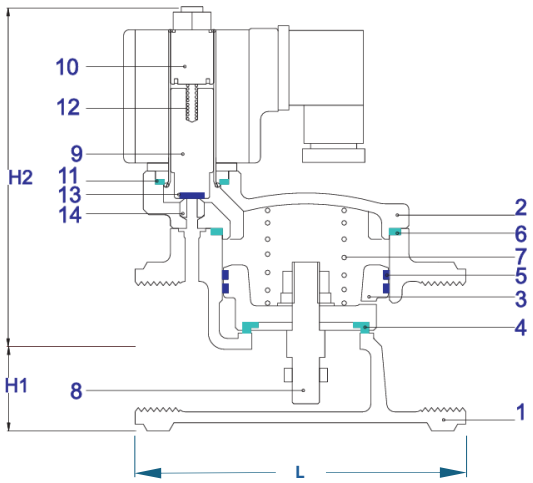
Model	Connection		Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Dimension (mm)			Weight (kg)
	Inches	Type			Steam, Water, Air	Oil (< 50cst)	L	H1	H2	
MT-15	1/2"	Screw	20	7.4	0.3 - 10	0.3 - 7	80	18	120	1.7
MT-20	3/4"		20	7.4			80	18	120	1.7
MT-25	1"		25	12.0			100	24	122	2.2
MT-32	1 1/4"		32	15.0			110	28	122	2.5
MT-40	1 1/2"		40	20.0			120	31	125	3.1
MT-50	2"		50	30.0			140	38	132	4.1
MT-32F	1 1/4"	Flange JIS10K	32	15.0	0.3 - 10	0.3 - 7	150	68	122	6.5
MT-40F	1 1/2"		40	20.0			160	70	125	7.3
MT-50F	2"		50	30.0			170	78	132	9.4

* Nor. Closed : 0.3 ~16 kgf/cm² 、0.3 ~ 20 kgf/cm² on request. Nor. Open 0.3 ~12 kgf/cm² on request * Min.Operating Pressure ΔP : 0.3 kgf/cm²

MT (M17) Series | Pilot-operated Type | N.C.

- Suitable for steam, air, inert gases, water, and oil (Below 50 cst).
- Can be mounted in vertical and horizontal position.
- Maximum working temperature up to 200 ˚C.

Steam
Water
Air
Gas
Oil



■ Common Specification

Item	Description	
Fluid	Water, Air, Gas, Oil	Steam
Fluid Temperature	Max. 90˚C	Max. 200˚C
Power Source	AC 24, 110, 220 50/60Hz DC 12, 24V	
Insulation Class	F Class = Max. 150˚C	H Class = Max. 180˚C
Power Consumption	AC : 35 VA DC : 26W	
Fluid Viscosity	< 50 cst	
Installation	Vertical / Horizontal	
Operation	Normally Closed	
Coil type	Waterproof : IP65	

■ Main Parts List

NO.	Descriptions	Material	
		Max. 90˚C	Max. 200˚C
1.	Valve body	BC6	BC6
2.	Valve bonnet	BC6	BC6
3.	Main valve	BC6	BC6
4.	Main valve seat	Teflon	Teflon
5.	Main valve ring	Carbon Resin	Carbon Resin
6.	Packing	NBR	Teflon
7.	Spring	SUS304	SUS304

NO.	Descriptions	Material	
		Max. 90˚C	Max. 200˚C
8.	Main valve guide rod	SUS303L	SUS303L
9.	Plunger	KM-31	KM-31
10.	Plunger tube unit	SUS304,KM-31	SUS304,KM-31
11.	Packing	NBR	Teflon
12.	Spring	SUS304	SUS304
13.	Plunger Seat	Viton	Teflon
14.	Pilot hole seat	SUS303L	SUS303L

■ Model Type

M T - □□ F W A G S H C - M17

Series

- Coil · N/A : Iron case · M17 : Waterproof
- Operation · N/A : Normally closed · C : Normally open
- Max. Pressure (kgf/cm²) · N/A : 10 · H : Steam = 16 ; Other = 20
- Media · W : Water · A : Oil · G : Gas · S : Steam
- Connection · N/A : Screw · F : Flange (10K)
- Size · 15 (1/2") · 20 (3/4") · 25 (1") · 32 (1-1/4") · 40 (1-1/2") · 50 (2")

■ Valve Specification

Model	Connection		Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Dimension (mm)			Weight (kg)
	Inches	Type			Steam, Water, Air	Oil (< 50cst)	L	H1	H2	
MT-15-M17	1/2"	Screw	20	7.4	0.3 - 10	0.3 - 7	80	18	120	1.7
MT-20-M17	3/4"		20	7.4			80	18	120	1.7
MT-25-M17	1"		25	12.0			100	24	122	2.2
MT-32-M17	1 1/4"		32	15.0			110	28	122	2.5
MT-40-M17	1 1/2"		40	20.0			120	31	125	3.1
MT-50-M17	2"		50	30.0			140	38	132	4.1
MT-32F-M17	1 1/4"	Flange JIS10K	32	15.0	0.3 - 10	0.3 - 7	150	68	122	6.5
MT-40F-M17	1 1/2"		40	20.0			160	70	125	7.3
MT-50F-M17	2"		50	30.0			170	78	132	9.4

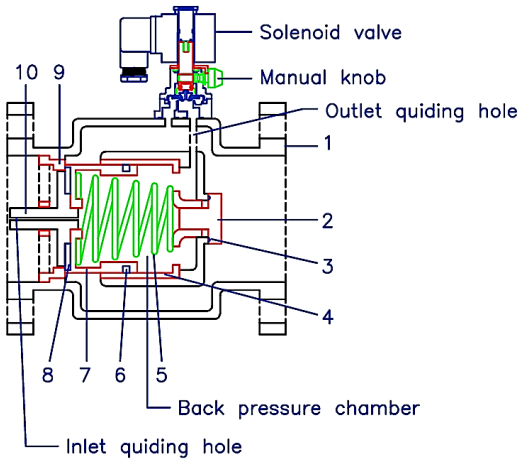
* Nor. Closed : 0.3 ~16 kgf/cm² 、0.3 ~ 20 kgf/cm² on request. Nor. Open 0.3 ~12 kgf/cm² on request * Min.Operating Pressure ΔP : 0.3 kgf/cm²

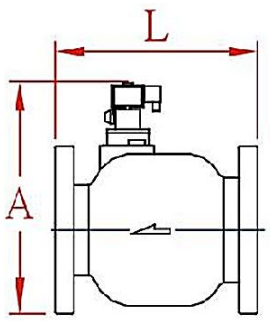
BMT(F) Series | Pilot-operated Type | N.C.

High Flow Rate Solenoid Valve - With Manual Override

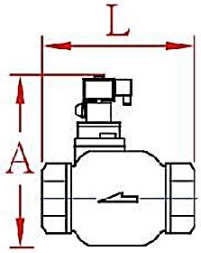
- Suitable for general clean water fluids.
- Pilot-operated solenoid valve with manual switch, allowing valve operation during power outages.
- This model requires a minimum working pressure differential of 1.0 kgf/cm².

Water





Flange(BMF)



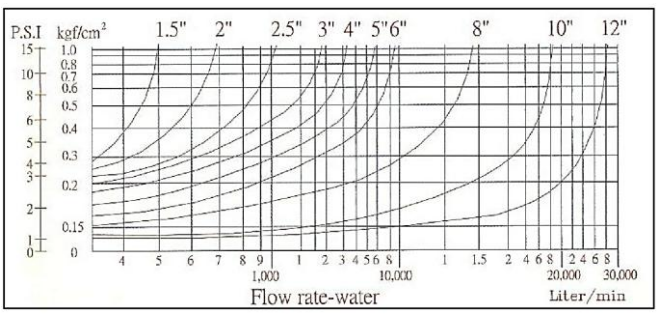
Threaded(BMT)

■ Main Parts List

NO.	Descriptions	Material			
1.	Main Body	Cast Iron	Ductile Iron	Bronze	SCS 304
2.	Cylinder Bolt	Cast Iron	Ductile Iron	Brass	SCS 304
3.	O ring	NBR			
4.	Cylinder	Bronze			SCS 304
5.	Spring	SUS304			
6.	U ring	NBR			
7.	Piston	Bronze			SCS 304
8.	Sealing	NBR			
9.	Seat	Bronze			SCS 304
10.	Shaft	Bronze			SCS 304
11.	Solenoid valve	Assembly (Body BSBF)			

■ Common Specification

Item	Description
Fluid	Water
Fluid Temperature	-15 ~ 80°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	DC : 21W AC : 24 VA
Fluid Viscosity	-
Installation	Horizontal
Operation	Normally Closed
Coil type	Waterproof : IP65



■ Model Type

B M □ - □□ - M13 - L

- L: N/A : None L : LED (only for M13)
- □□: Size · 40 - 50 (Screw) · 50 – 300 (Flange)
- □: Connection · T (Screw) · F (Flange)

■ Valve Specification

Model	Connection		Cv Value	Operating Pressure (kgf/cm²)	Dimension (mm)		Weight (kg)
	Inches	Type			L	A	
BMT-40-M13	1 ½”	Screw	48	1 – 10 (Min. working pressure: ΔP = 1)	120	140	4.2
BMT-50-M13	2”		75		200	160	8.7
BMF-50-M13	2”	Flange (JIS-10K, PN16)	75		190	160	10.7
BMF-65-M13	2 ½”		105		210	165	13.7
BMF-80-M13	3”		140		225	180	16.7
BMF-100-M13	4”		260		250	192	22.7
BMF-125-M13	5”		390		280	215	33.7
BMF-150-M13	6”		550		310	230	42.7
BMF-200-M13	8”		1000		420	270	85.7
BMF-250-M13	10”		1600		470	305	150.7
BMF-300-M13	12”		2200		530	340	200.7

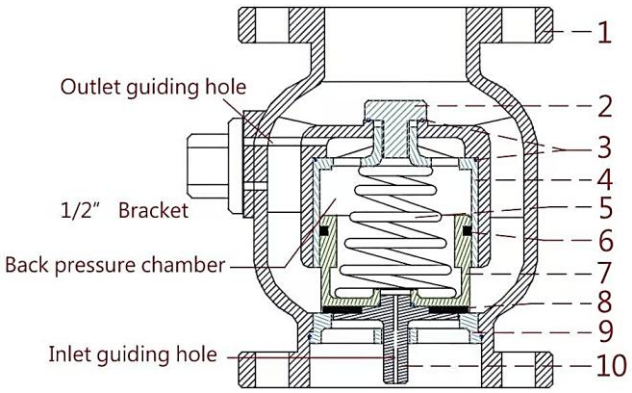
BT(F)E Series | Pilot-operated Type | N.C.

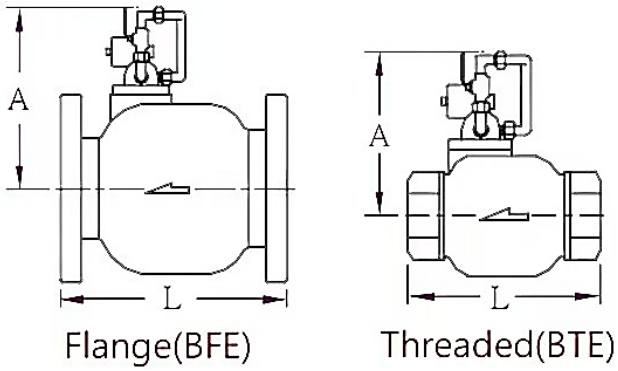
High Flow Rate Solenoid Valve - With Manual Override

- Suitable for general clean water fluids.
- Pilot-operated solenoid valve with manual switch, allowing valve operation during power outages.
- This model requires a minimum working pressure differential of 1.0 kgf/cm².

Water

Air





■ Main Parts List

NO.	Descriptions	Material			
1.	Main Body	Cast Iron	Ductile Iron	Bronze	SCS 304
2.	Cylinder Bolt	Cast Iron	Ductile Iron	Brass	SCS 304
3.	O ring	NBR			
4.	Cylinder	Bronze			SCS 304
5.	Spring	SUS304			
6.	U ring	NBR			
7.	Piston	Bronze			SCS 304
8.	Sealing	NBR			
9.	Seat	Bronze			SCS 304
10.	Shaft	Bronze			SCS 304
11.	Solenoid valve	Assembly (BSBF or SCS304 or SCS316)			

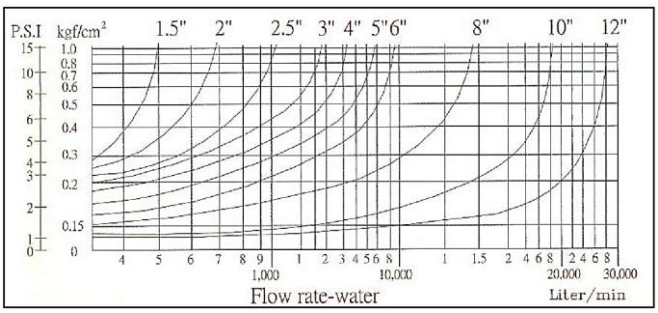
■ Common Specification

Item	Description
Fluid	Water, Air
Fluid Temperature	-15 ~ 80°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	DC : 21W AC : 24 VA
Fluid Viscosity	-
Installation	Horizontal
Operation	Normally Closed
Coil type	Waterproof : IP65

■ Model Type

B □ E - □□ - M13 - L

- L: N/A : None, L : LED (only for M13)
- □□: Size · 40 - 50 (Screw) · 50 – 300 (Flange)
- □: Connection · T (Screw) · F (Flange)



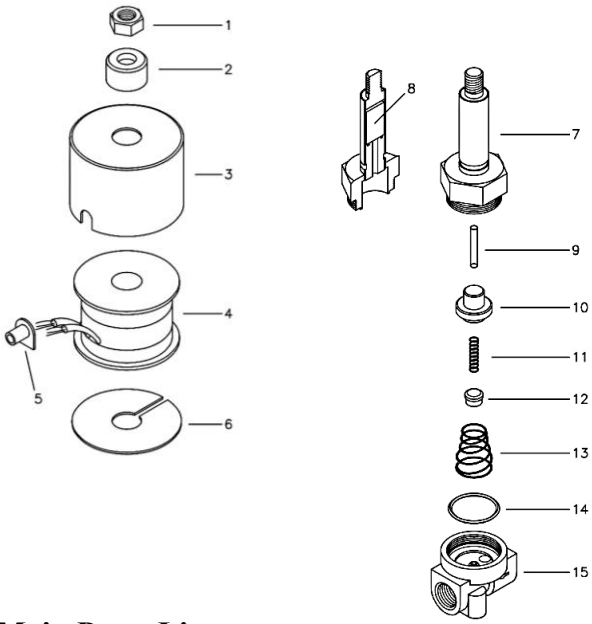
■ Valve Specification

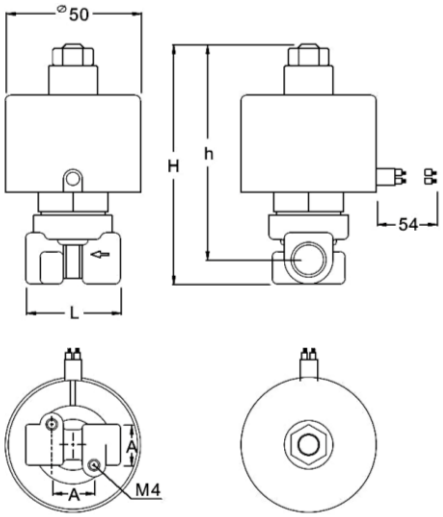
Model	Connection		Cv Value	Operating Pressure (kgf/cm²)	Dimension (mm)		Weight (kg)
	Inches	Type			L	A	
BTE-40-M13	1 ½"	Screw	19	1 – 12 (Min. working pressure: ΔP = 1)	120	225	5.6
BTE-50-M13	2"		37		200	230	10
BFE-50-M13	2"	Flange (JIS-10K, PN16)	37		190	246	12
BFE-65-M13	2 ½"		85		212	255	15
BFE-80-M13	3"		110		225	274	18
BFE-100-M13	4"		150		250	306	24
BFE-125-M13	5"		230		284	329	32
BFE-150-M13	6"		450		310	373	44
BFE-200-M13	8"		580		420	401	87
BFE-250-M13	10"		910		470	445	152
BFE-300-M13	12"		1300		535	450	202

MK2A-8(10)C series | Direct-acting Type | N.O.

- Suitable for air, inert gases, vacuum (10 Torr), water, kerosene oil, and oil (Below 50 cst).
- Normally open direct acting solenoid valve.
- Can be mounted in vertical and horizontal position.
- Operates directly without requiring pressure differential.

Water **Air** **Gas** **Oil**





■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Nut	SUS 304	9.	Needle	SUS 304
2.	Washer	SUS 304	10.	Sleeve of plug	SUS 304
3.	Coil bonnet	SPC	11.	Spring	SUS 304
4.	Solenoid coil	B class	12.	Plunger seat	H NBR
5.	Lead collar	NBR	13.	Spring	SUS 304
6.	Spacer	SPC	14.	O ring	NBR
7.	Plunger tube unit	SUS304, KM-31	15.	Valve body	BSBF
8.	Plunger	KM-31			

* SUS 304 on request

■ Common Specification

Item	Description
Fluid	Air, Gas, Vacuum, Water, Oil
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	B Class = Max. 130°C
Power Consumption	22 VA
Fluid Viscosity	< 50 cst
Installation	Horizontal / Vertical
Operation	Normally Open
Coil type	Iron case type : IP54

■ Model Type

M K 2 A - 0 5 3 0 - □□ C - S C S 1 3

Series

- Body material · N/A : BSBF · SCS13 : SUS304
- Size · 8 (1/4") · 10 (3/8")
- Pressure & Orifice

■ Valve Specification

Model	Connection	Orifice (mm)	Max. Pressure (kgf/cm²)		Cv Value	Dimensions (mm)								Weight (g)	
						1/4"				3/8"				1/4"	3/8"
			Air	Water, Oil		L	H	h	A	L	H	h	A		
MK2A-0530-□□C	1/4" or 3/8" (NPT or PT)	3	4	3	0.25	35	89	80	18 (2-M4)	42	91	88	24 (2-M5)	420	470
MK2A-0820-□□C		2	8	6	0.15										
MK2A-1216-□□C		1.6	12	8	0.095										

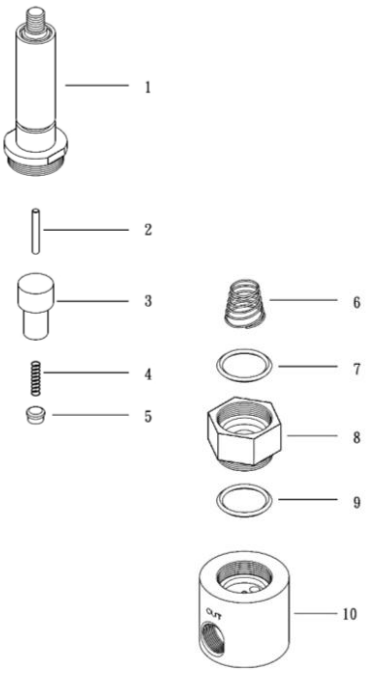
* 1/8" on request

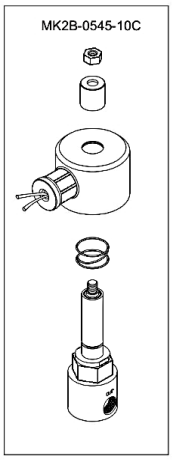
MK2B-10C series | Direct-acting Type | N.O.

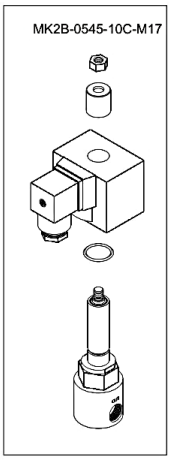
- Suitable for air, inert gases, vacuum(10 Torr).
- Direct acting solenoid valves, normally open.
- Can be mounted in vertical and horizontal position.
- Operates directly without requiring pressure differential.

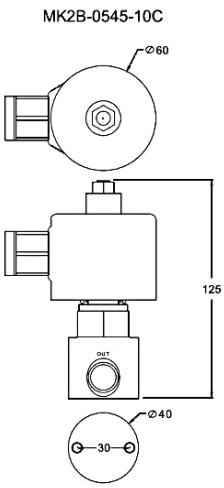
Air

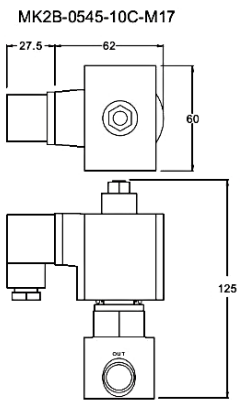
Gas











■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Plunger tube unit	SUS 304, KM-31	6.	Spring	SUS 304
2.	Needle stem	SUS 304	7.	O ring	NBR
3.	Sleeve of plug	SUS 304	8.	Nut	BSBF
4.	Spring	SUS 304	9.	O ring	NBR
5.	Plunger seat	H NBR	10.	Valve body	BSBF

* SUS 304 on request

■ Common Specification

Item	Description
Fluid	Air, Gas
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	26 VA
Fluid Viscosity	< 50 cst
Installation	Horizontal / Vertical
Operation	Normally Open
Coil type	Iron case type : IP54 Waterproof type : IP65

■ Model Type

M K 2 B - 0 5 4 5 - 1 0 C - S C S 1 3 - M 1 7

Series

- Coil · N/A : Iron case · M17 : Waterproof
- Body material · N/A : BSBF · SCS13 : SUS304
- Size · 10 (3/8")
- Pressure & Orifice

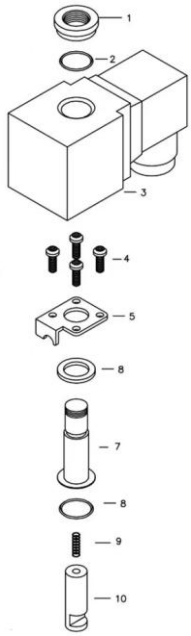
■ Valve Specification

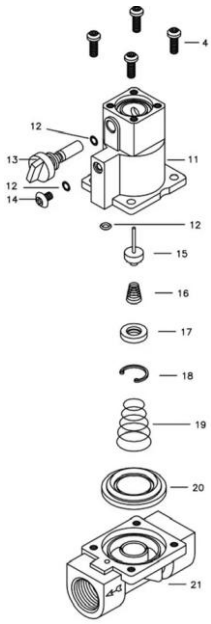
Model	Connection	Orifice (mm)	Max. Pressure (kgf/cm²)	Cv Value	Mounting hole (mm)
			Air		A
MK2B-0545-10C	3/8" (NPT or PT)	4.5	5	0.42	2-M6
MK2B-1230-10C		3.0	12	0.3	
MK2B-2520-10C		2.0	25	0.18	
MK2B-4016-10C		1.6	40	0.11	

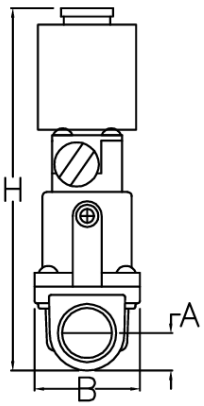
MA-C BFE Series | Pilot-operated Type | N.O.

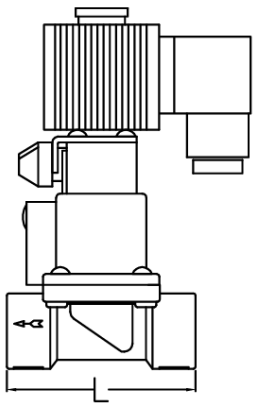
- Solenoid valve with manual knob, allowing valve operation during power outages.
- Diaphragm-type solenoid valve with high flow capacity.
- Suitable for various fluids such as air, inert gases, water, kerosene, and oil (below 50 cst).

Water **Air** **Gas** **Oil**









■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Nut	Aluminum	12.	O ring	NBR
2.	O ring	NBR	13.	Manual button	AMC
3.	IP 65 Molding coil		14.	Bolt	SUS304
4.	Bolt	SS304	15.	Pilot pin	SUS304, VITON
5.	Plate	SPC	16.	Spring	SUS304
6.	Washer	SPC	17.	Spring seat	BSBF
7.	Plunger tube unit	SUS304, KM-31	18.	C-clip	SUS304
8.	O ring	NBR	19.	Spring	SUS304
9.	Plunger spring	SUS304	20.	Diaphragm a'ssy	NBR or EPDM or Viton
10.	Plunger	KM-31	21.	Valve body	BSBF
11.	Valve bonnet	BSBF			

■ Common Specification

Item	Description
Fluid	Water, Air, Gas, Oil
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	DC : 21W AC : 20 VA
Fluid Viscosity	< 50 cst
Installation	Vertical / Horizontal
Operation	Normally Open
Coil type	Waterproof : IP65

■ Model Type

M A - □□ CBFE - EP - M13 - L

Series

- L: N/A : None L : LED (only for M13)
- M13: Coil · N/A : Iron case · M13 : Waterproof
- EP: Diaphragm · N/A : NBR · EP : EPDM · V : VITON
- □□: Size · 10 (3/8") · 15 (1/2")

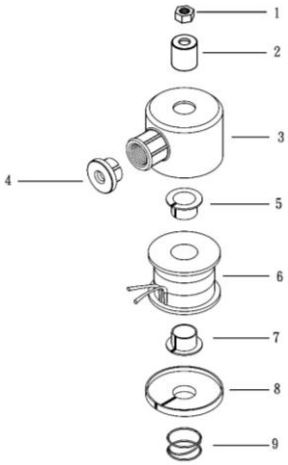
■ Valve Specification

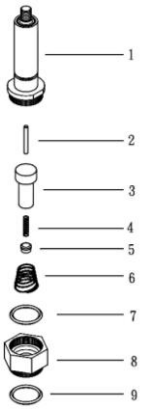
Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)	Dimension (mm)				Weight (g)
					L	H	B	A	
MA-10CBFE-M13	PT 3/8"	12	2.6	0.1 - 10	69	131	38	13.5	830
MA-15CBFE-M13	PT 1/2"								

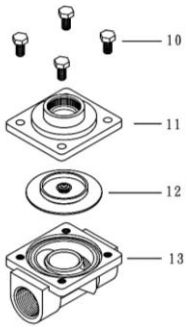
MD-C Series | Pilot-operated Type | N.O.

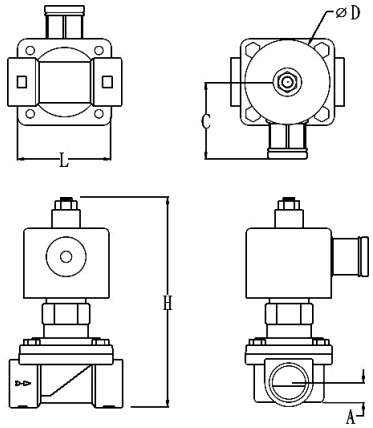
- Suitable for air, inert gases, vacuum (10 Torr), water, kerosene oil, and oil (Below 50 cst).
- Pilot operated, pressure range from 0.3kg*f/cm² to 10kg*f/cm².
- Can be mounted in vertical and horizontal position.

Water
Air
Gas
Oil









■ Main Parts List

NO.	Descriptions	Material
1.	Hexagon nut	SUS 304
2.	Coil sleeve	SUS 303L
3.	Coil bonnet	SUS 303L
4.	Lead cap	ABS
5.	Bobbin sleeve	SPC
6.	Coil	B class
7.	Bobbin sleeve	SPC
8.	Spacer	SPC
9.	Coil spring	SWP2

NO.	Descriptions	Material
1.	Plunger tube unit	SUS304, KM-31
2.	Needle stem	SUS 303L
3.	Seat sleeve	SUS 303L
4.	Plunger spring	SUS 304
5.	Plunger seat	H NBR
6.	Spring	SUS 304
7.	O ring	NBR
8.	Nut	SUS 303L
9.	O ring	NBR
10.	Hexagon bolt	SUS 304
8.	Valve bonnet	3/8"~1" (C3771BE) 1-1/4"~2" (BC6) ½"~2" (SCS13/SCS14)
12.	Diaphragm a'ssy	SUS304, BSBF(SUS304) NBR (EPDM) (Viton)
13.	Valve body	3/8"~1" (C3771BE) 1-1/4"~2" (BC6) ½"~2" (SCS13/SCS14)

■ Common Specification

Item	Description
Fluid	Water, Air, Gas, Oil
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	B Class = Max. 130°C
Power Consumption	DC : 21W AC : 26 VA
Fluid Viscosity	< 50 cst
Installation	Vertical / Horizontal
Operation	Normally Open
Coil type	Iron case type : IP54

■ Model Type

M D - □□ WAGC - SCS13 - EP - M17 - L

Series

N/A : None L : LED (only for M17)

Coil · N/A : Iron case · M17 : Waterproof

Diaphragm · N/A : NBR · EP : EPDM · V : VITON

Body material · N/A : Brass · SCS13 : SUS304 · SCS14 : SUS316

Media · W : Water · A : Oil · G : Gas · C : Normally Closed

Size (PT or NPT) · 10 (3/8") · 15 (1/2") · 20 (3/4") · 25 (1") · 32 (1-1/4") · 40 (1-1/2") · 50 (2")

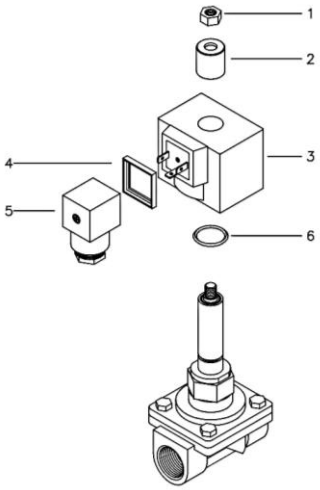
■ Valve Specification

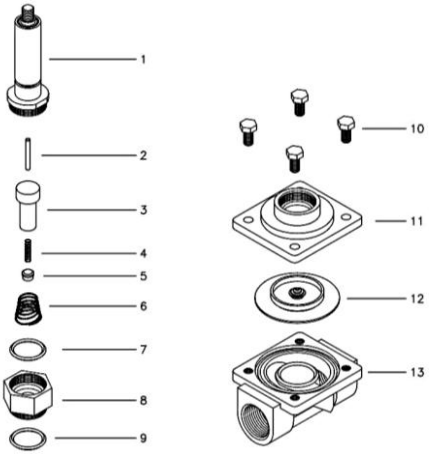
Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Dimension (mm)					Weight (kg)
				Air, Water Inert gases	Oil (< 50cst)	L	H	A	C	D	
MD-10WAGC	PT 3/8"	16	3.7	0.3 - 10	0.3 - 7	70	147	15	56	Ø62	1.1
MD-15WAGC	PT 1/2"	16	3.7			70	147	15			1.1
MD-20WAGC	PT 3/4"	23	6.3			80	157	17.5			1.4
MD-25WAGC	PT 1"	28	8			90	167	23			1.7
MD-32WAGC	PT 1 1/4"	32	13			120	149	26			2.6
MD-40WAGC	PT 1 1/2"	40	20.3			136	159	32			3.5
MD-50WAGC	PT 2"	50	32			160	169	37			4.7

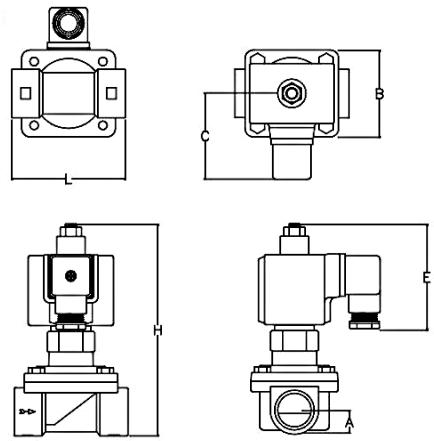
MD-C(M17) Series | Pilot-operated Type | N.O.

- Suitable for air, inert gases, vacuum (10 Torr), water, kerosene oil, and oil (Below 50 cst).
- Pilot operated, pressure range from 0.1kg*f/cm² to 10kg*f/cm².
- Can be mounted in vertical and horizontal position.

Water
Air
Gas
Oil







■ Main Parts List

NO.	Descriptions	Material
1.	Hexagon nut	SUS 304
2.	Coil sleeve	SUS 303L
3.	H class IP65 molding coil	
4.	Terminal box packing pad	
5.	Terminal box	
6.	O ring	NBR

NO.	Descriptions	Material
1.	Plunger tube unit	SUS304, KM-31
2.	Needle stem	SUS 303L
3.	Seat sleeve	SUS 303L
4.	Plunger spring	SUS 304
5.	Plunger seat	H NBR
6.	Spring	SUS 304
7.	O ring	NBR
8.	Nut	SUS 303L
9.	O ring	NBR
10.	Hexagon bolt	SUS 304
8.	Valve bonnet	3/8"~1" (C3771BE) 1-1/4"~2" (BC6) ½"~2" (SCS13/SCS14)
12.	Diaphragm a'ssy	SUS304, BSBF(SUS304) NBR (EPDM) (Viton)
13.	Valve body	3/8"~1" (C3771BE) 1-1/4"~2" (BC6) ½"~2" (SCS13/SCS14)

■ Common Specification

Item	Description
Fluid	Water, Air, Gas, Oil
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Insulation Class	H Class = Max. 180°C
Power Consumption	DC : 21W AC : 26 VA
Fluid Viscosity	< 50 cst
Installation	Vertical / Horizontal
Operation	Normally Open
Coil type	Waterproof : IP65

■ Model Type

M D - □□ WAGC - SCS13 - EP - M17 - L

Series

N/A : None L : LED (only for M17)

Coil · N/A : Iron case · M17 : Waterproof

Diaphragm · N/A : NBR · EP : EPDM · V : VITON

Body material · N/A : Brass · SCS13 : SUS304 · SCS14 : SUS316

Media · W : Water · A : Oil · G : Gas · C : Normally Closed

Size (PT or NPT) · 10 (3/8") · 15 (1/2") · 20 (3/4") · 25 (1") · 32 (1-1/4") · 40 (1-1/2") · 50 (2")

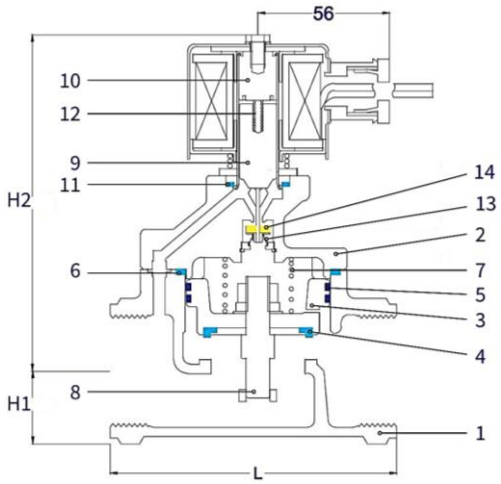
■ Valve Specification

Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Dimension (mm)						Weight (kg)
				Air, Water Inert gases	Oil (< 50cst)	L	H	A	B	C	E	
MD-10WAGC-M17	PT 3/8"	16	3.7	0.1 - 10	0.1 - 7	70	147	15	52	65	73	1.1
MD-15WAGC-M17	PT 1/2"	16	3.7			70	147	15	52			1.1
MD-20WAGC-M17	PT 3/4"	23	6.3			80	157	17.5	62			1.4
MD-25WAGC-M17	PT 1"	28	8			90	167	23	72			1.7
MD-32WAGC-M17	PT 1 1/4"	32	13			120	149	26	83			2.6
MD-40WAGC-M17	PT 1 1/2"	40	20.3			136	159	32	97			3.5
MD-50WAGC-M17	PT 2"	50	32			160	169	37	112			4.7

MT-C Series | Pilot-operated Type | N.O.

- The normally open pilot-operated solenoid valve can be selected for use with steam or water.
- Can be mounted in vertical and horizontal position.
- Features dual pilot holes for fast response. Maximum pressure options include 10 kgf/cm² and 12 kgf/cm².

Steam
Water
Air
Gas
Oil



■ Common Specification

Item	Description	
Fluid	Water, Air, Gas, Oil	Steam
Fluid Temperature	Max. 90˚C	Max. 200˚C
Power Source	AC 24, 110, 220 50/60Hz DC 12, 24V	
Insulation Class	F Class = Max. 150˚C	H Class = Max. 180˚C
Power Consumption	AC : 35 VA DC : 26W	
Fluid Viscosity	< 50 cst	
Installation	Vertical / Horizontal	
Operation	Normally Closed	
Coil type	Iron case : IP54	

■ Main Parts List

NO.	Descriptions	Material	
		Max. 90˚C	Max. 200˚C
1.	Valve body	BC6	BC6
2.	Valve bonnet	BC6	BC6
3.	Main valve	BC6	BC6
4.	Main valve seat	Teflon	Teflon
5.	Main valve ring	Carbon Resin	Carbon Resin
6.	Packing	NBR	Teflon
7.	Spring	SUS304	SUS304

NO.	Descriptions	Material	
		Max. 90˚C	Max. 200˚C
8.	Main valve guide rod	SUS303L	SUS303L
9.	Plunger	KM-31	KM-31
10.	Plunger tube unit	SUS304,KM-31	SUS304,KM-31
11.	Packing	NBR	Teflon
12.	Spring	SUS304	SUS304
13.	Spring	SUS304	SUS304
14.	Needle seat	Viton	Teflon

■ Model Type

M T - □□ F W A G S H C - M17

Series

- Coil · N/A : Iron case · M17 : Waterproof
- Operation · N/A : Normally closed · C : Normally open
- Max. Pressure (kgf/cm²) · N/A : 10 · H : Steam = 16 ; Other = 20
- Media · W : Water · A : Oil · G : Gas · S : Steam
- Connection · N/A : Screw · F : Flange (10K)
- Size · 15 (1/2") · 20 (3/4") · 25 (1") · 32 (1-1/4") · 40 (1-1/2") · 50 (2")

■ Valve Specification

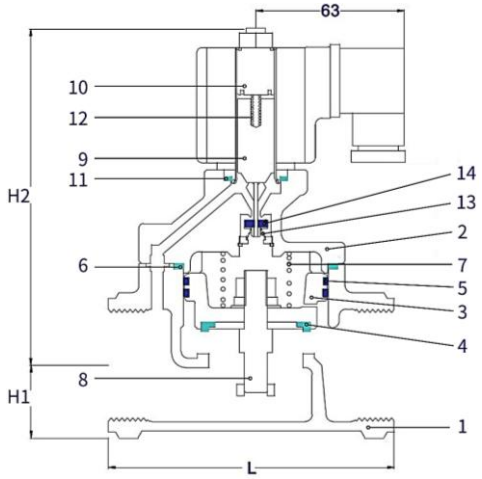
Model	Connection		Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Dimension (mm)			Weight (kg)
	Inches	Type			Steam, Water, Air	Oil (< 50cst)	L	H1	H2	
MT-15C	1/2"	Screw	20	7.4	0.3 - 10	0.3 - 7	80	18	130	1.7
MT-20C	3/4"		20	7.4			80	18	130	1.7
MT-25C	1"		25	12.0			100	24	133	2.2
MT-32C	1 1/4"		32	15.0			110	28	138	2.5
MT-40C	1 1/2"		40	20.0			120	31	144	3.1
MT-50C	2"		50	30.0			140	38	156	4.1
MT-32FC	1 1/4"	Flange JIS10K	32	15.0	0.3 - 10	0.3 - 7	150	68	138	6.5
MT-40FC	1 1/2"		40	20.0			160	70	144	7.3
MT-50FC	2"		50	30.0			170	78	156	9.4

* Nor. Closed : 0.3 ~16 kgf/cm² 、0.3 ~ 20 kgf/cm² on request. Nor. Open 0.3 ~12 kgf/cm² on request * Min.Operating Pressure ΔP : 0.3 kgf/cm²

MT-C(M17) Series | Pilot-operated Type | N.O.

- The normally open pilot-operated solenoid valve can be selected for use with steam or water.
- Can be mounted in vertical and horizontal position.
- Features dual pilot holes for fast response. Maximum pressure options include 10 kgf/cm² and 12 kgf/cm².

Steam | Water | Air | Gas | Oil



■ Common Specification

Item	Description	
Fluid	Water, Air, Gas, Oil	Steam
Fluid Temperature	Max. 90˚C	Max. 200˚C
Power Source	AC 24, 110, 220 50/60Hz DC 12, 24V	
Insulation Class	F Class = Max. 150˚C	H Class = Max. 180˚C
Power Consumption	AC : 35 VA DC : 26W	
Fluid Viscosity	< 50 cst	
Installation	Vertical / Horizontal	
Operation	Normally Closed	
Coil type	Waterproof : IP65	

■ Main Parts List

NO.	Descriptions	Material	
		Max. 90˚C	Max. 200˚C
1.	Valve body	BC6	BC6
2.	Valve bonnet	BC6	BC6
3.	Main valve	BC6	BC6
4.	Main valve seat	Teflon	Teflon
5.	Main valve ring	Carbon Resin	Carbon Resin
6.	Packing	NBR	Teflon
7.	Spring	SUS304	SUS304

NO.	Descriptions	Material	
		Max. 90˚C	Max. 200˚C
8.	Main valve guide rod	SUS303L	SUS303L
9.	Plunger	KM-31	KM-31
10.	Plunger tube unit	SUS304,KM-31	SUS304,KM-31
11.	Packing	NBR	Teflon
12.	Spring	SUS304	SUS304
13.	Spring	SUS304	SUS304
14.	Needle seat	Viton	Teflon

■ Model Type

M T - □□ F W A G S H C - M17

Series

- Coil · N/A : Iron case · M17 : Waterproof
- Operation · N/A : Normally closed · C : Normally open
- Max. Pressure (kgf/cm²) · N/A : 10 · H : Steam = 16 ; Other = 20
- Media · W : Water · A : Oil · G : Gas · S : Steam
- Connection · N/A : Screw · F : Flange (10K)
- Size · 15 (1/2") · 20 (3/4") · 25 (1") · 32 (1-1/4") · 40 (1-1/2") · 50 (2")

■ Valve Specification

Model	Connection		Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Dimension (mm)			Weight (kg)
	Inches	Type			Steam, Water, Air	Oil (< 50cst)	L	H1	H2	
MT-15C-M17	1/2"	Screw	20	7.4	0.3 - 10	0.3 - 7	80	18	130	1.7
MT-20C-M17	3/4"		20	7.4			80	18	130	1.7
MT-25C-M17	1"		25	12.0			100	24	133	2.2
MT-32C-M17	1 1/4"		32	15.0			110	28	138	2.5
MT-40C-M17	1 1/2"		40	20.0			120	31	144	3.1
MT-50C-M17	2"		50	30.0			140	38	156	4.1
MT-32FC-M17	1 1/4"	Flange JIS10K	32	15.0	0.3 - 10	0.3 - 7	150	68	138	6.5
MT-40FC-M17	1 1/2"		40	20.0			160	70	144	7.3
MT-50FC-M17	2"		50	30.0			170	78	156	9.4

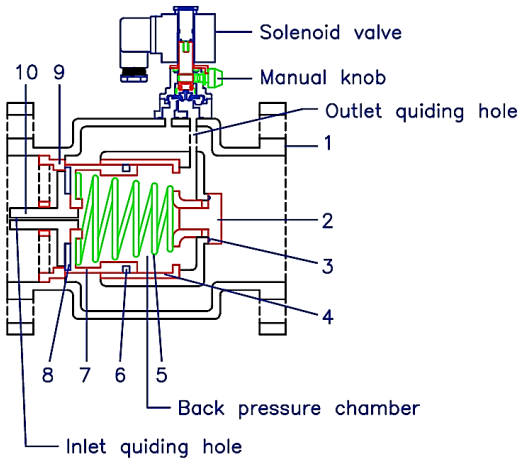
* Nor. Closed : 0.3 ~16 kgf/cm² 、0.3 ~ 20 kgf/cm² on request. Nor. Open 0.3 ~12 kgf/cm² on request * Min.Operating Pressure ΔP : 0.3 kgf/cm²

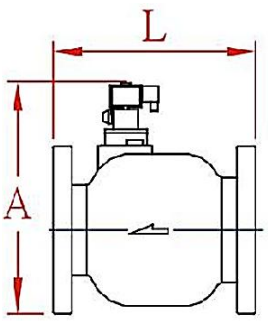
BMT(F)-C Series | Pilot-operated Type | N.O.

High Flow Rate Solenoid Valve - With Manual Override

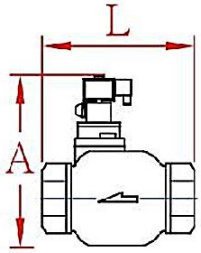
- Suitable for general clean water fluids.
- Pilot-operated solenoid valve with manual switch, allowing valve operation during power outages.
- This model requires a minimum working pressure differential of 1.0 kgf/cm².

Water





Flange(BMF)



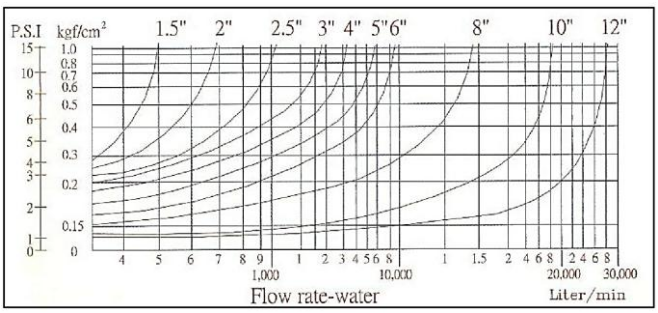
Threaded(BMT)

■ Main Parts List

NO.	Descriptions	Material			
1.	Main Body	Cast Iron	Ductile Iron	Bronze	SCS 304
2.	Cylinder Bolt	Cast Iron	Ductile Iron	Brass	SCS 304
3.	O ring	NBR			
4.	Cylinder	Bronze			SCS 304
5.	Spring	SUS304			
6.	U ring	NBR			
7.	Piston	Bronze			SCS 304
8.	Sealing	NBR			
9.	Seat	Bronze			SCS 304
10.	Shaft	Bronze			SCS 304
11.	Solenoid valve	Assembly (Body BSBF)			

■ Common Specification

Item	Description
Fluid	Water
Fluid Temperature	-15 ~ 80°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	DC : 21W AC : 24 VA
Fluid Viscosity	-
Installation	Horizontal
Operation	Normally Open
Coil type	Waterproof : IP65



■ Model Type

B M □ - □□C - M13 - L

L : N/A : None L : LED (only for M13)

Size · 40 - 50 (Screw) · 50 – 300 (Flange)

Connection · T (Screw) · F (Flange)

■ Valve Specification

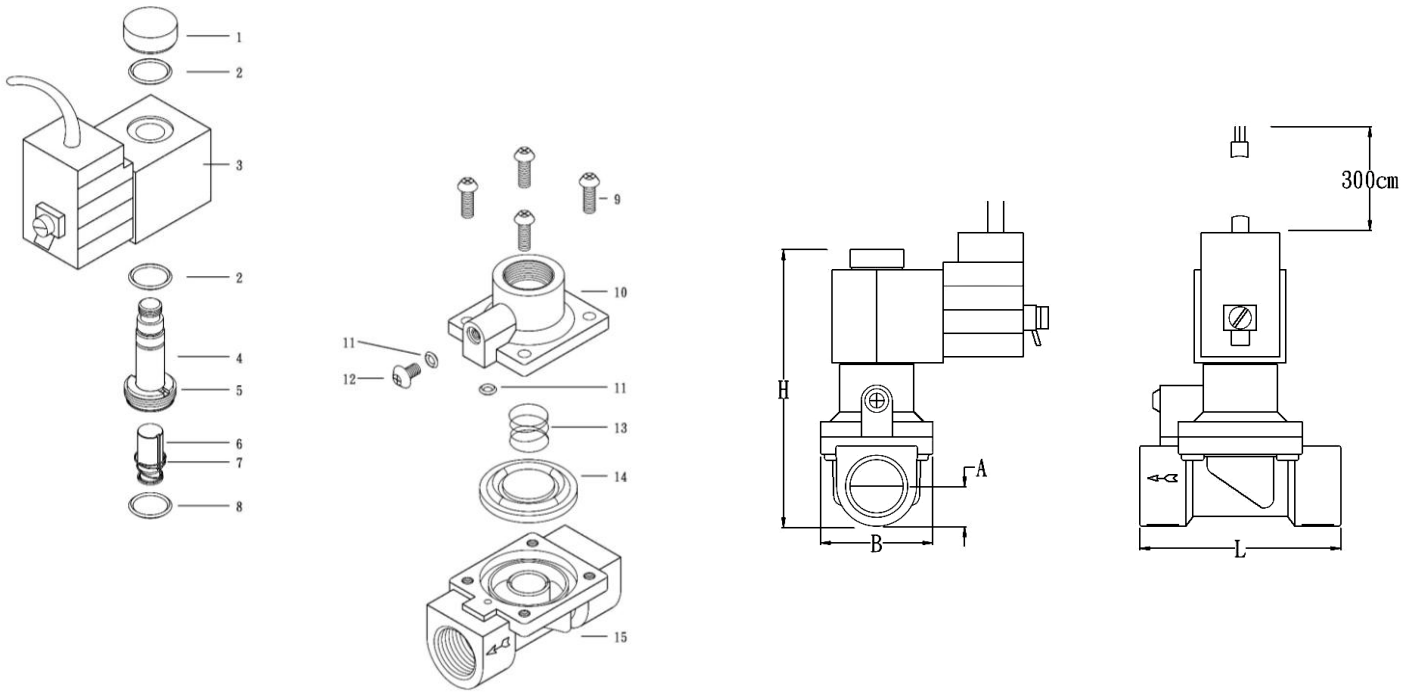
Model	Connection		Cv Value	Operating Pressure (kgf/cm²)	Dimension (mm)		Weight (kg)
	Inches	Type			L	A	
BMT-40C-M13	1 ½”	Screw	48	1 – 10 (Min. working pressure: ΔP = 1)	120	165	4.2
BMT-50C-M13	2”		75		200	185	8.7
BMF-50C-M13	2”	Flange (JIS-10K, PN16)	75		190	185	10.7
BMF-65C-M13	2 ½”		105		210	190	13.7
BMF-80C-M13	3”		140		225	205	16.7
BMF-100C-M13	4”		260		250	217	22.7
BMF-125C-M13	5”		390		280	240	33.7
BMF-150C-M13	6”		550		310	255	42.7
BMF-200C-M13	8”		1000		420	295	85.7
BMF-250C-M13	10”		1600		470	330	150.7
BMF-300C-M13	12”		2200		530	365	200.7

MA-P-Exp Series | Pilot-operated Type | N.C.

Explosion-proof solenoid valve

MA-P10~15-Ex is equipped with imported Italian explosion-proof coils, certified by ATEX and IECEx. This normally closed, pilot-operated diaphragm solenoid valve features connection sizes ranging from PT3/8" to 1/2".

Water
Air
Gas
Oil



■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Nut	Aluminum	9.	Bolt	SUS304
2.	O ring	NBR	10.	Valve bonnet	BSBF or SCS14
3.	Coil Ass'y		11.	O ring	NBR EPDM Viton
4.	Plunger's Tube	SS304, KM-31	12.	Screw	SUS304
5.	Plunger's Tube Nut	Zn	13.	Diaphragm spring	SUS304
6.	Plunger	KM-31	14.	Diaphragm	NBR EPDM Viton
7.	Plunger spring	SUS304	15.	Valve body	BSBF or SCS14
8.	O ring	NBR EPDM Viton			

■ Common Specification

Item	Description
Fluid	Water, Air, Gas, Oil
Fluid Temperature	-5 ~ 90°C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	5.2W
Fluid Viscosity	< 50 cst
Installation	Vertical / Horizontal
Operation	Normally Closed
Coil type	Explosion proof coil

■ Model Type

M A - P □□ - EXP

Series Size · 10 (3/8") · 15 (1/2")

■ Valve Specification

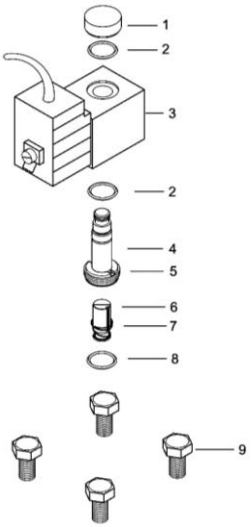
Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Dimension (mm)				Weight (g)
				Inert Gases	Water, Oil	L	H	B	A	
MA-P10-EXP	PT 3/8"	12	2.6	0.1 – 16	0.1 - 15	69	92	38	13.5	685
MA-P15-EXP	PT 1/2"									

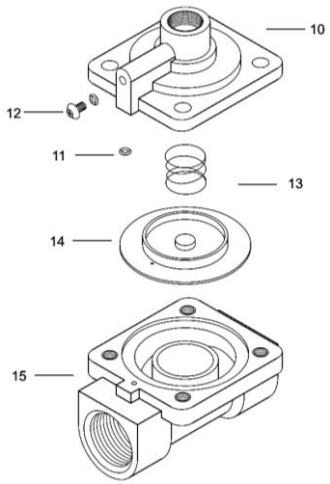
MD-P-Exp Series | Pilot-operated Type | N.C.

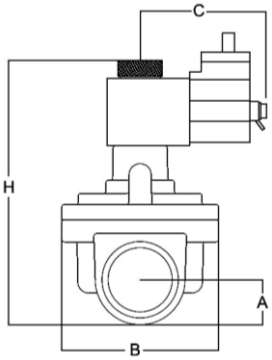
Explosion-proof solenoid valve

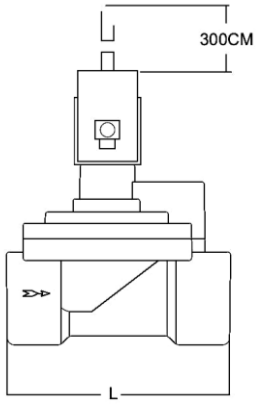
MD-P10~25-Exp is equipped with imported Italian explosion-proof coils, certified by ATEX and IECEx. This normally closed, pilot-operated diaphragm solenoid valve features connection sizes ranging from PT3/8" to 1“.

Water
Air
Gas
Oil









■ Main Parts List

NO.	Descriptions	Material	NO.	Descriptions	Material
1.	Nut	Aluminum	9.	Bolt	SUS304
2.	O ring	NBR	10.	Valve bonnet	BSBF
3.	IP 65 Molding coil		11.	O ring	NBR EPDM Viton
4.	Plunger’s Tube	SS304, KM-31	12.	Screw	SUS304
5.	Plunger’s Tube Nut	Zn	13.	Diaphragm spring	SUS304
6.	Plunger	KM-31	14.	Diaphragm	NBR EPDM Viton
7.	Plunger spring	SUS304	15.	Valve body	BSBF
8.	O ring	NBR EPDM Viton			

■ Common Specification

Item	Description
Fluid	Water, Air, Gas, Oil
Fluid Temperature	-5 ~ 90˚C
Power Source	AC 24, 110, 220, 380V 50/60Hz DC 12, 24V
Power Consumption	5W
Fluid Viscosity	< 50 cst
Installation	Vertical / Horizontal
Operation	Normally Closed
Coil type	Explosion proof coil

■ Model Type

M D - P □□ WAG - EXP

Series

Media · W : Water · A : Oil · G : Gas

Size · 10 (3/8”) · 15 (1/2”) · 20 (3/4”) · 25 (1”)

■ Valve Specification

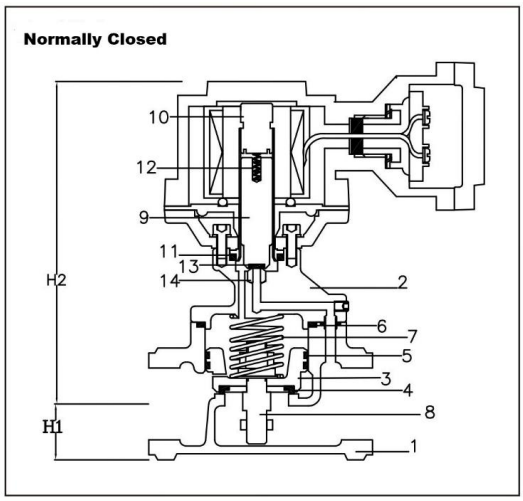
Model	Connection	Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)			Dimension (mm)				
				Air, Gas	Water	Oil (< 50cst)	L	H	B	A	C
MD-P10WAG-EXP	PT 3/8”	16	4.5	0.3-16	0.5-16	0.5-12	80	98	15	52	60
MD-P15WAG-EXP	PT 1/2”	16	4.5				80	98	15	52	
MD-P20WAG-EXP	PT 3/4”	23	7.6				90	108	17.5	62	
MD-P25WAG-EXP	PT 1”	28	9.6				100	118	23	72	

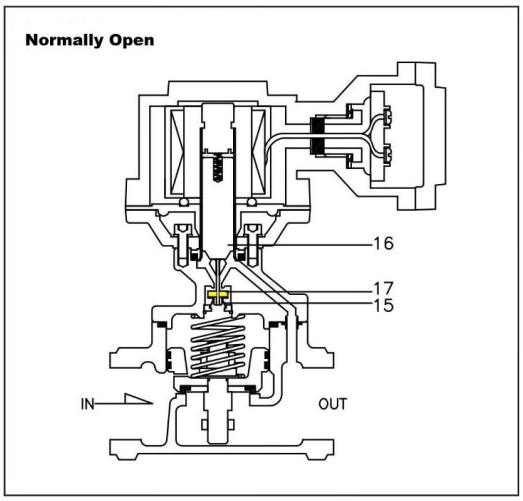
MT-BT Series | Pilot-operated Type | N.C./N.O.

Explosion-proof solenoid valve

MT-BT is an Ex d IIB T3 Gb explosion-proof solenoid valve.
This normally closed or normally open, pilot-operated solenoid valve is available with screw connections from PT 1/2" to 2", or flange connections from 1-1/4" to 2".

Steam | Water | Air | Gas | Oil





■ Main Parts List

NO.	Descriptions	Material	
		Max. 90˚C	Max. 200˚C
1.	Valve body	BC6	BC6
2.	Valve bonnet	BC6	BC6
3.	Main valve	BC6	BC6
4.	Main valve seat	Teflon	Teflon
5.	Main valve ring	Carbon Resin	Carbon Resin
6.	Packing	NBR	Teflon
7.	Spring	SUS304	SUS304

NO.	Descriptions	Material	
		Max. 90˚C	Max. 200˚C
8.	Main valve guide rod	SUS303L	SUS303L
9.	Plunger	KM-31	KM-31
10.	Plunger tube unit	SUS304,KM-31	SUS304,KM-31
11.	Packing	NBR	Teflon
12.	Spring	SUS304	SUS304
13.	Plunger seat	Viton	Teflon
14.	Pilot hole seat	SUS303L	SUS303L
15.	Spring	SUS304	SUS304
16.	Plunger	KM-31	KM-31
17.	Needle seat	Viton	Teflon

■ Common Specification

Item	Description	
Fluid	Water, Air, Gas, Oil	Steam
Fluid Temperature	Max. 90˚C	Max. 200˚C
Power Source	AC 24, 110, 220 50/60Hz DC 12, 24V	
Insulation Class	H Class = Max. 180˚C	
Power Consumption	AC : 25 VA DC : 19W	

■ Model Type

M T - □□ BT F W A G S H C

Series

- Operation · N/A : N.C. · C : N.O.
- Max. Pressure (kgf/cm²)
- Media · W : Water · A : Oil · G : Gas · S : Steam
- Connection · N/A : Screw · F : Flange (10K)
- Explosion proof solenoid valve D2G3
- Size

■ Valve Specification

Model	Connection		Orifice (mm)	Cv Value	Operating Pressure (kgf/cm²)		Dimension (mm)			Weight (kg)
	Inches	Type			Steam, Water, Air	Oil (< 50cst)	L	H1	H2	
MT-15BT	1/2”	Screw	20	7.4	0.3 - 10	0.3 - 7	80	18	130	2.5
MT-20BT	3/4”		20	7.4			80	18	130	2.5
MT-25BT	1”		25	12.0			100	24	133	3.0
MT-32BT	1 1/4”		32	15.0			110	28	138	3.5
MT-40BT	1 1/2”		40	20.0			120	31	144	4.0
MT-50BT	2”		50	33.0			140	38	156	5.0
MT-32BTF	1 1/4”	Flange JIS10K	32	15.0	0.3 - 10	0.3 - 7	150	68	138	7.5
MT-40BTF	1 1/2”		40	20.0			160	70	144	8.2
MT-50BTF	2”		50	33.0			170	78	156	10.3

* Nor. Closed : 0.3 ~16 kgf/cm² 、0.3 ~ 20 kgf/cm² on request. Nor. Open 0.3 ~12 kgf/cm² on request * Min.Operating Pressure ΔP : 0.3 kgf/cm²

Solenoid Valve Series Overview

Selection Table

Operation	Model	Motion		Connection size		Temp. Range (°C)	Media	Pressure Range Kgf/cm²	Waterproof Coil (IP65)
		N.C.	N.O.	PT or NPT	Flange				
Direct-acting	MS-NL	V		1/4”		0 ~ 60	W	0 ~ 8	
	MK2-POM	V		1/4"		0 ~ 60	W	0 ~ 8	
	MK2-A6	V		1/8”		-5 ~ 90	W A G	0 ~ 20	V
	MK2-8	V		1/4"		-5 ~ 90	W A G	Vacuum ~ 30	V
	MK2A	V		1/4“, 3/8”		-5 ~ 90	W A G	Vacuum ~ 50	V
	MK2B	V		1/4"		0 ~ 90	W A G	Vacuum ~ 100	
	MG-10	V		3/8”		0 ~ 60	G	Vacuum ~ 1	
	MK2A-8(10)C		V	1/4“, 3/8”		-5 ~ 90	W A G	Vacuum ~ 12	V
	MK2B-10C		V	3/8”		-5 ~ 90	W A G	Vacuum ~ 40	V
Semi direct acting	MA	V		3/8”, 1/2”		-5 ~ 90	W A G	Vacuum ~ 20	V
	MA-BFE	V		3/8”, 1/2”		-5 ~ 90	W A G	Vacuum ~ 10	V
	MD	V		3/8” ~ 2”		-5 ~ 90	W A G	Vacuum ~ 20	V
	MK	V		3/8” ~ 1”		-10 ~ 180	W A G S	Vacuum ~ 10	V
Pilot operated	MA-P	V		3/8”, 1/2”		-5 ~ 90	W A G	0.1 ~ 16	V
	MD-P	V		3/8” ~ 1”		-5 ~ 90	W A G	0.1 ~ 16	V
	MA-P-Exp	V		3/8”, 1/2”		-5 ~ 90	W A G	0.1 ~ 16	V
	MD-P-Exp	V		3/8” ~ 1”		-5 ~ 90	W A G	0.1 ~ 16	V
	MT	V		1/2” ~ 2”	1-1/4” ~ 2”	-5 ~ 200	W A G S	0.3 ~ 20	V
	BMT(F)	V		1-1/2”, 2”	2” ~ 12”	0 ~ 60	W	1 ~ 10	V
	BT(F)E	V		1-1/2”, 2”	2” ~ 12”	0 ~ 60	W	1 ~ 10	V
	MA-C BFE		V	3/8”, 1/2”		-5 ~ 90	W A G	0.1 ~ 10	V
	MD-C		V	3/8” ~ 2”		-5 ~ 90	W A G	0.1 ~ 10	V
	MT-C		V	1/2” ~ 2”	1-1/4” ~ 2”	-5 ~ 200	W A G S	0.3 ~ 12	V
	BMT(F)-C		V	1-1/2”, 2”	2” ~ 12”	0 ~ 60	W	1 ~ 10	V

* Media type · W : Water · A : Oil · G : Gas, Air · S : Steam · Vacuum = 10 Torr

Specifications

Items	Descriptions
Electrical voltage	AC 24, 100, 110, 120, 200, 220, 240 V 50/60 Hz DC 12, 24 V
Coil permissible time	Continuous duty 1 year / 10,000 hrs.
Permissible voltage deviation	± 10 %
Insulation resistance	500V 100MΩ
Permissible test voltage for coil insulation	1500V at 60 seconds holding
Ambient temperature	-20 ~ 50 °C
Permissible pressure for the valve body	When < 10kgf/cm², permissible pressure for the valve body is equal to 2 times of operation pressure. When > 10kgf/cm², permissible pressure for the valve body is equal to 1.5 times of operation pressure.
Warranty lifetime	1 year or 500,000 cycles

Structure and Notes of Solenoid Valves

What Is a Solenoid Valve

A solenoid valve is a valve that uses the force of an **electromagnet (solenoid coil)** to open, close, or switch a fluid flow path by turning the power **ON or OFF**.

Structural Types

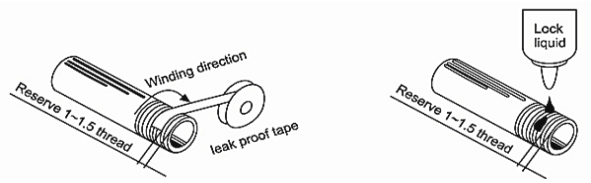
Types	Descriptions	Features
Direct-Acting	• This type uses a magnetic component called a **plunger** to directly seal or open the flow path. • The valve operates solely by the magnetic force of the solenoid, so it is commonly used for small orifice sizes. • In general, it provides reliable operation with a simple structure.	• Operates immediately when energized • No differential pressure required • Suitable for low flow rates
Semi-direct acting	• This type combines the characteristics of both direct-acting and pilot-operated valves. • The plunger and the main valve are mechanically linked by a pin or joint spring, allowing the valve to operate **even at zero differential pressure**.	• Operates immediately when energized • No differential pressure required • Suitable for low flow rates
Pilot operated	• This type seals the flow path using both a **plunger and a main valve**. The plunger and the main valve operate independently: the plunger is actuated by the solenoid force, while the main valve is actuated by fluid pressure. • Therefore, a **minimum operating differential pressure** is required. Compared to the direct-acting type, the structure is more complex, and **operation is not possible at zero differential pressure**.	• Differential pressure required • Capable of handling large flow rates

Precautions for Use

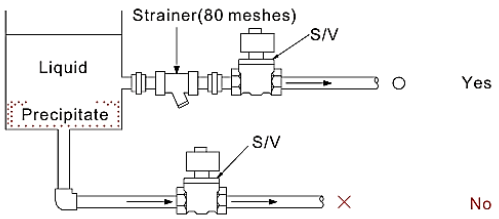
1. Before use, confirm that the operating conditions match the information on the nameplate.
2. Clean the piping before installation and install a strainer of 80 mesh or finer on the inlet side.
3. Ensure correct orientation of the inlet (primary) and outlet (secondary) sides during installation.
4. Provide sufficient space around the valve and consider installing a bypass line for maintenance.
5. Do not energize the coil when it is removed from the valve body to avoid coil damage.
6. Connect the power supply correctly and operate within the specified voltage and frequency ranges.
7. Do not install the solenoid valve in locations where the ambient temperature exceeds 50°C.
8. Do not touch the coil or coil bonnet during or immediately after energization, as heating is normal.
9. Use the valve only within its specified limits for fluid type, pressure, temperature, and ambient conditions.
10. Before maintenance, always turn off the power supply, release all pressure and fluid, and perform regular inspections.

Installation Instruction

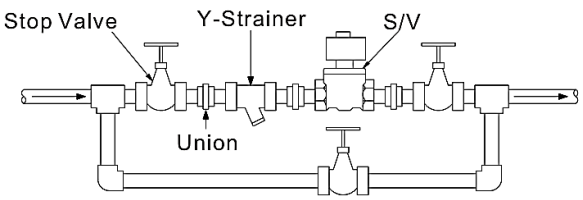
1. Dust, metal chip and tape seal in the pipes should be removed before installation.
2. When using seal tape on the connector or fittings, do not wrap the front two pitch of teeth by seal tape to prevent the seal tape from entering internal of solenoid valve.



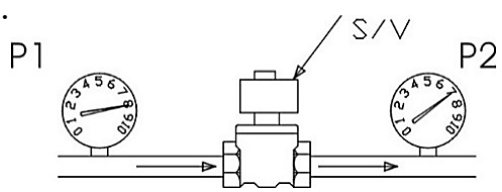
3. For long-standing and normal operation, when the fluid is Air, Air filter should be installed before valve, when the medium is Steam or Water, 80 mesh Y-strainer should be installed before S/V.
4. For preventing frozen liquid and malfunction of S/V, pipes should be equipped with heater when the ambient temperature reaches 0°C below 0°C at freezing condition.
5. Make sure the bolt on the coil bonnet is tight properly to avoid making noise of cause the solenoid coil burned out when re-assembly or turning the coil enclosures.
6. Do not use media pressure over the specified pressure range in the catalogue. Please peruse the specified working pressure for different model numbers in the product's catalogue.
7. The voltage at range of 10% is allowed. For protecting the solenoid coil, do not use the voltage over 10% or less 10%.
8. Don't exceed or lower the maximum and minimum pressure rage when operating.
9. When valves are installed in the piping for liquid transfer, be sure to keep a certain height from bottom for tank nozzles thus the precipitation can be avoided passing through S/V.



10. A by-pass is essential for the maintenance of S/V installed in pipe. Please refer to the sketch below as reference.



11. The following condition are necessary for using 2/2 pilot operated solenoid valves.
    - Minimum operating differential pressure.
    - Minimum operating flow rate.



12. To install kick pilot 2/2 solenoid valve the installation angle at vertical angle or $15° is required. (solenoid coil's location on the top)

The calculation for flow rate

※The relationship between S/V and flow rate

1.Main factors for flow rate, pressure difference and Cv value.
2.The selection of solenoid valve should be determined by requested flow rate, proper port size and pressure will perform well.
3.Oversized dimension will cause waste of energy.
(Unstable acting for pilot operated valves, if flow in pipe is smaller than the essential minimum flow, valves can't be actuated)
4.If port size of the valve is too small, the essential flow can not be reached.

※Calculation of Cv value

1.Liquid such as Water and Oil :

$$Q=14.28Cv\frac{\sqrt{P1-P2}}{\sqrt{G}}$$

2.Gases such as Air and Inert gases :

(A) $P2\leq\frac{1}{2}P1$ (B) $P2>\frac{1}{2}P1$

$$Q=198.3Cv\frac{P1}{\sqrt{G}} \qquad Q=396.5Cv\sqrt{(P1-P2)P2}\frac{1}{\sqrt{G}}$$

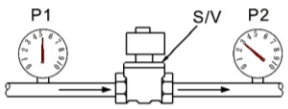
3.Steam :

(A) $P2\leq\frac{1}{2}P1$ (B) $P2>\frac{1}{2}P1$

$$Q=11.8Cv\frac{P1}{K} \qquad Q=13.6Cv\frac{\sqrt{\Delta P\times(P1+P2}}{K}$$

Q : Flow rate L/min(Air, Water, Oil)
Kg/h(steam)
P1 : Abs. pressure of valve inlet Kg*f/cm^2 abs
P2 : Abs. pressure of valve outlet Kg*f/cm^2 abs
Abs. Pressure = Gauge pressure + 1.03
G : Specific Gravity
K : 1+0.0013 ts ts : Superheated temp. ℃
(For saturated steam, K=1)

※Calculation by performance chart

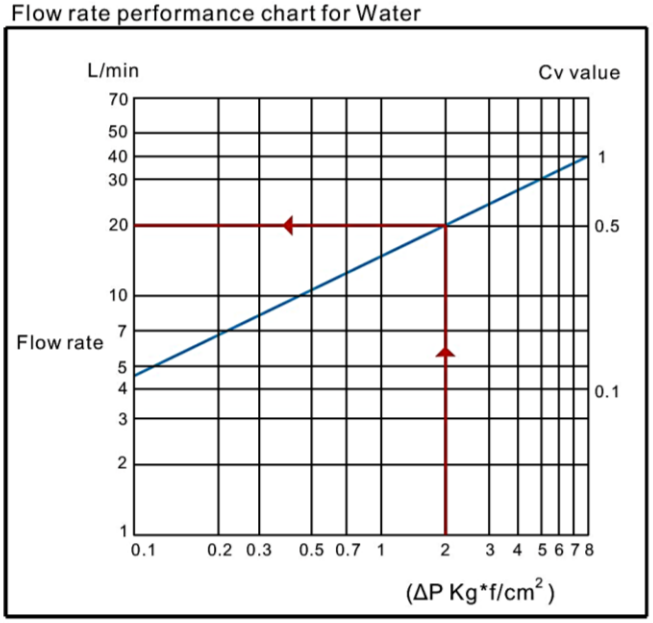


$\Delta P = P1 - P2$

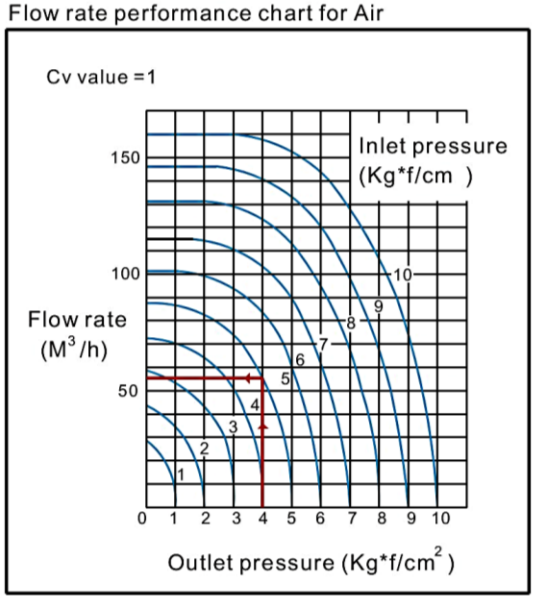
(Exa) When MD-15 is used in Water piping the inlet pressure is 5 Kg*f/cm^2 and outlet pressure is 3Kg*f/cm^2 .Please calculate the Water flow rate?

(Sol) From performance chart on right .
$\Delta P=2$ and Cv value is 1. The corresponding flow rate is 20.2 L/min.
Then from performance chart of valve.
The Cv value of MD-15 is 3.7 so the flow rate in pipe is $Q=20.2\times3.7$
$\fallingdotseq 74.8$ L/min

Flow rate performance chart for Water



Flow rate performance chart for Air



Flow rate performance chart for Saturated Steam