

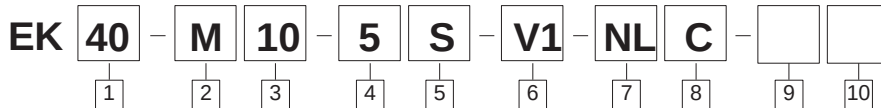
EK Series

Vacuum ejector

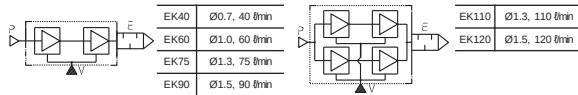


- Multi-station vacuum ejector with large flow rate
 - Compact & Manifold type (Body / Base port)
- Various vacuum flow rate
 - Min. 40Nℓ/min ~ Max. 120Nℓ/min
- Power saving with improved performance
 - Performance improvement based on supply standards of 0.35 MPa and 0.4 MPa
 - ※ Supply pressure of previous EM/EL series : 0.5MPa
- Excellent long-term continuous energization characteristics (Power saving type valve option)
- Prevents workpiece drop during momentary power outage (Latching type valve option)

How to order



(1) Nozzle size suction flow rate



(2) Supply / Exhaust

S	Single type Direct SUP/EXH	Silencer exhaust
MA	Manifold type Direct SUP/EXH	Silencer exhaust
M	Manifold type Manifold SUP / Direct EXH	Silencer exhaust
MB	Manifold type Manifold SUP/EXH	Both side ports exhaust
MR	Manifold type Manifold SUP/EXH	Right port exhaust
ML	Manifold type Manifold SUP/EXH	Left port exhaust

Note1) Based on the front view of the vacuum V-port

Note 2) Silencer is separately sold

(3) Number of stations

1	1 station	Single type & Maintenance part for manifold type
2	2 stations	Manifold type
~	~	
10	10 stations	

Note) Based on the front view of the vacuum V-port

■ Maximum number of stations(MA, M, MB, ML, MR)

Size	EK40	EK60	EK75	EK90	EK110	EK120
Stations	10	10	8	6	4	2

(4) Voltage

5	DC24V
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Note) Please contact us for other voltages.

(5) PCB type

Blank	Standard (0.85W)
D	Non-polar (0.85W)
S	Power saving(0.45W)

Note) Latching valve is only available with 1.0W

(6) Solenoid valve option

Symbol	Supply	Release
V1	N.C	N.C
V2	N.O	N.C
V3	N.O	-
V4	N.C	-
V5	Latching	N.C
V6	Latching	-

(7) Vacuum switch option

Item	Symbol	Specifications
*	Blank	No vacuum switch
VPS-	NK	Digital display, vacuum pressure, connector / NPN 2 points + analog output
	NL	Digital display, vacuum pressure, grommet / NPN 2 points + analog output
	PK	Digital display, vacuum pressure, connector / PNP 2 points + analog output
	PL	Digital display, vacuum pressure, grommet / PNP 2 points + analog output
	CNK	Digital display, gauge pressure, connector / NPN 2 points + analog output
	CNL	Digital display, gauge pressure, grommet / NPN 2 points + analog output
	CPK	Digital display, gauge pressure, connector / PNP 2 points + analog output
VMS-	CPL	Digital display, gauge pressure, grommet / PNP 2 points + analog output
	N1	LED, vacuum pressure, connector type / NPN 1 point + analog output
*	N2	LED, vacuum pressure, connector type / NPN 2 points

(8) Vacuum switch lead wire

Blank	0.6m (N1 type only)
C	2.0m or 3.0m

Note1) Blank is only applicable for N1 type

Note 2) C is applicable all switches other than N1 type

Note 3) 2.0m is for N2, and digital grommet type / 3.0m is for digital connector type

(9) Check valve

Blank	No check valve
H	With check valve

(10) Bracket

Blank	No bracket
B	With bracket

Note1) Only available with Single type(S)

Note 2) Bracket(1EA) is enclosed separately

Specifications

Specification								Valve specification						
Fluid		Air						Vacuum valve		Releasing valve	Vacuum valve			
Operating pressure MPa		0.15 ~ 0.7						Control		N/C, N/O	N/C	Latching		
Performance	Series	EK40	EK60	EK75	EK90	EK110	EK120	Operating pressure range				0 ~ 0.7 MPa		
	Supply press. Mpa	0.35	0.4						Rated voltage				DC24V(standard)	
	Vacuum press. kPa (mmHg)	-85 (-638)						Allowable voltage				±10% of rated voltage		
	Suction flow rate l/min (ANR)	40	60	75	90	110	120	Operation				Solenoid valve		
	Air consumption l/min (ANR)	25	55	95	100	170	180	Effective area				Supply(P → A) : 0.28 mm ² , Exhaust (A → R) : 0.3 mm ² , Exhaust(A→R) : 0.2 mm ²		
	Noise level dB (single product)	60	60	80	80	85	85	Power consumption				Standard PCB : 0.85 W / Power savingPCB : 0.45W	SET : 0.85W / RESET : 0.7W	
	Max. number of Manifold	10	10	8	6	4	2	Surge protection				Diode		
Operating temp. °C		5 ~ 50						Response time				10ms or less (@ 0.5MPa)	5ms or less	
Filtration		PE, 100µm						Lubrication				Not necessary		
Port size	Type	Single type	Manifold type						Manual override				Push type	-
		S	MA	M	MB	MR	ML	Wiring						
	P port (supply)	Rc(PT) 1/8 (Individual)	Rc(PT) 1/8 (Individual)	Rc(PT) 1/4 (Concentrated)			Response time				5ms or less			
	V port (vacuum)	Rc(PT) 1/8 (Individual)						Lubrication				Not necessary		
R port (exhaust)	Silencer exhaust		Rc(PT) 3/4 (Concentrated)			Manual override				Push type		-		
Net weight (g)	Single type	Manifold type						Response time				2 pin connector		3 pin connector
		Ejector	Bracket 1pc	MA block (2EA)	M block (2EA)	MB block (2EA)	ML, MR (2EA)	Wiring				2 pin connector		3 pin connector
		305	15	180	175	160	170	Response time				2 pin connector		3 pin connector
Mounting		Free						Response time				2 pin connector		3 pin connector

Vacuum switch

Part number	VMS-□-□-□-□	VPS-□-□-□-□
Display	LED(red, green)	LED 3 Digit
Set vacuum level	-53.5kPa[-400mmHg] / 1 point	
Voltage	DC12~24V	
Output	NPN/PNP open collector 30V, 200mA	NPN/PNP open collector 30V, 80mA
Output point	1 point output + differential setting(analog output) or 2 point output	2 point output + analog output
Power consumption	30mA	50mA or less
Set pressure range	0kPa~-101kPa	
Guaranteed pressure	0.2MPa(Two time of rated voltage)	
Fluid	Air, Non-corrosive gas	
Operating temperature	0~60°C	
Temperature characteristics	±3%F.S or less	
Differential setting	0.5~10% F.S	3% F.S (fixed)
Response time	2.5ms or less	2.0ms or less
Repeatability	±1%F.S or less	±0.2%F.S or less
Electrical entry	Connector	Connector or Grommet
Function(VMS)	Differential setting trimmer (210°) Pressure setting trimmer(210°)	-

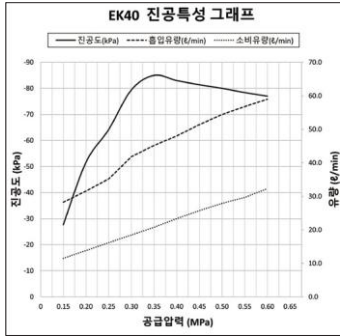
Color of vacuum switch lead wire

VMS	Brown	DC(+)
	Black	Output 1
	White	Output 2 (or analog output)
	Blue	DC(-)
VPS	Brown	DC(+)
	Black	Output 1
	White	Output 2
	Blue	DC(-)
	Yellow	Analog output

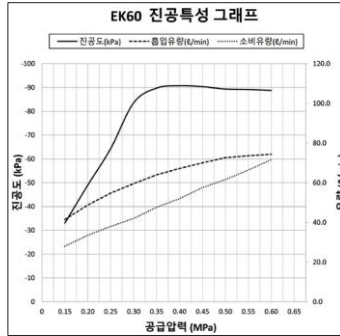
Characteristics graph

Vacuum characteristics

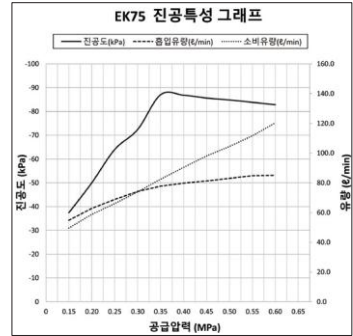
- Nozzle Ø0.7 (air supply : 0.35MPa)



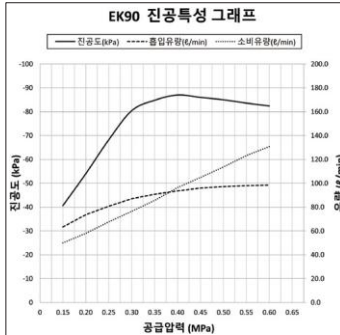
- Nozzle Ø1.0 (air supply : 0.4MPa)



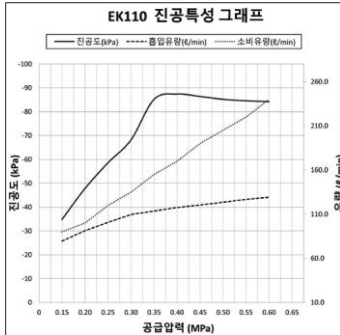
- Nozzle Ø1.3 (air supply : 0.4MPa)



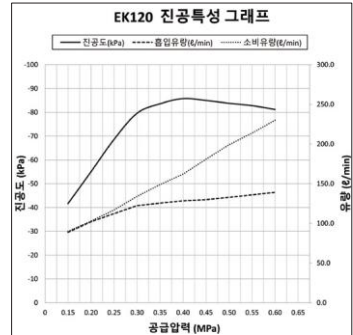
- Nozzle Ø1.5 (air supply : 0.4MPa)



- Nozzle Ø1.3 (air supply : 0.4MPa)



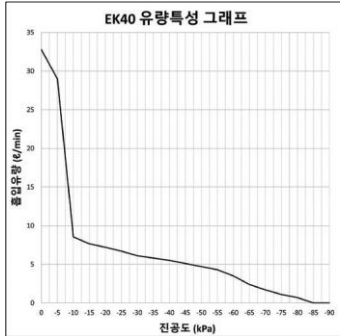
- Nozzle Ø1.5 (air supply : 0.4MPa)



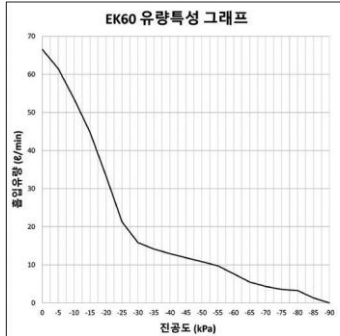
Note : The above graph shows representative values, and the flow characteristics may vary depending on piping conditions and other factors.

Flow characteristics

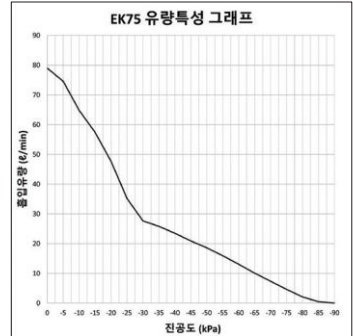
- Nozzle Ø0.7 (air supply : 0.35MPa)



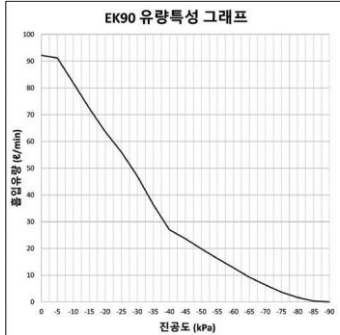
- Nozzle Ø1.0 (air supply : 0.4MPa)



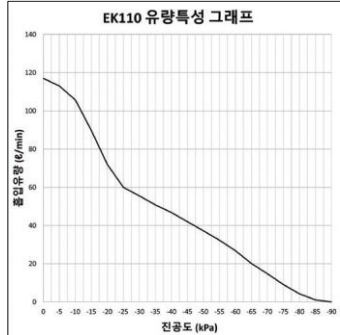
- Nozzle Ø1.3 (air supply : 0.4MPa)



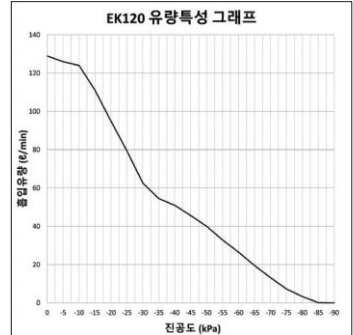
- Nozzle Ø1.5 (air supply : 0.4MPa)



- Nozzle Ø1.3 (air supply : 0.4MPa)

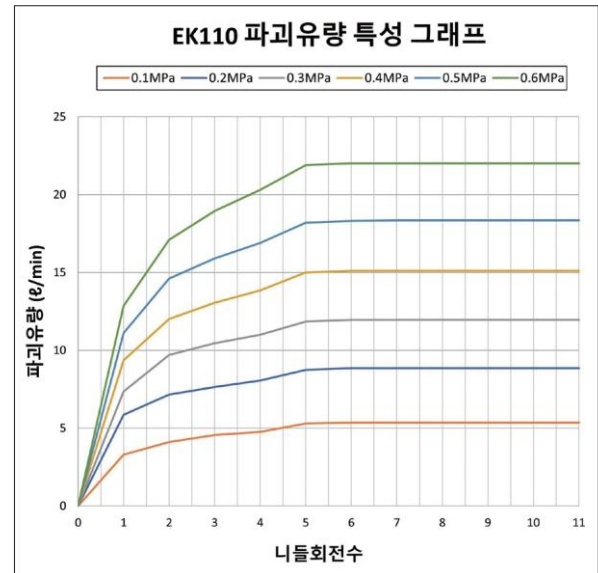
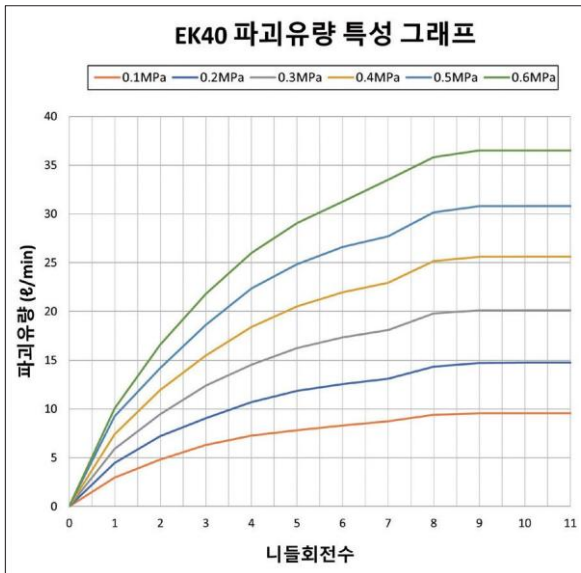


- Nozzle Ø1.5 (air supply : 0.4MPa)



Note : The above graph shows representative values, and the flow characteristics may vary depending on piping conditions and other factors.

Releasing flow characteristics



Note) The above graph represents typical values, and the flow characteristics may vary depending on piping conditions and other factors.

How to read flow characteristics

The flow characteristics represent the relationship between the vacuum pressure and suction flow rate of the ejector. They show that as the suction flow rate changes, the vacuum pressure also changes. Generally, this relationship is shown based on the ejector's standard operating pressure. In the diagram, Pmax indicates the maximum vacuum pressure, and Qmax indicates the maximum suction flow rate. These values are typically listed as specifications in catalogs and similar documents.

How Vacuum Pressure Changes

- 1) When the suction port of the ejector is blocked and sealed, the suction flow rate becomes zero, and the vacuum pressure reaches its maximum (Pmax).
- 2) If the suction port is gradually opened to allow air to flow in (air leakage), the suction flow rate increases and the vacuum pressure decreases (State of P1 and Q1).
- 3) When the suction port is fully opened, the suction flow rate reaches its maximum (Qmax), but the vacuum pressure drops significantly and approaches zero (atmospheric pressure). In this way, as the suction flow rate changes, the vacuum pressure also changes. In other words, if there is no leakage in the vacuum port (vacuum piping), the vacuum pressure will reach its maximum. As the leakage amount increases, the vacuum pressure drops. When the leakage amount equals the maximum suction flow rate, the vacuum pressure converges to a value close to zero. Note that for workpieces with air permeability or leakage, the required vacuum force is not very high, so caution is needed.

Precautions for use

If satisfactory performance is not achieved or if problems occur, please check and address the following possible causes. If the issue persists even after taking corrective actions, please consult us.

1. Vacuum performance degradation due to insufficient air supply

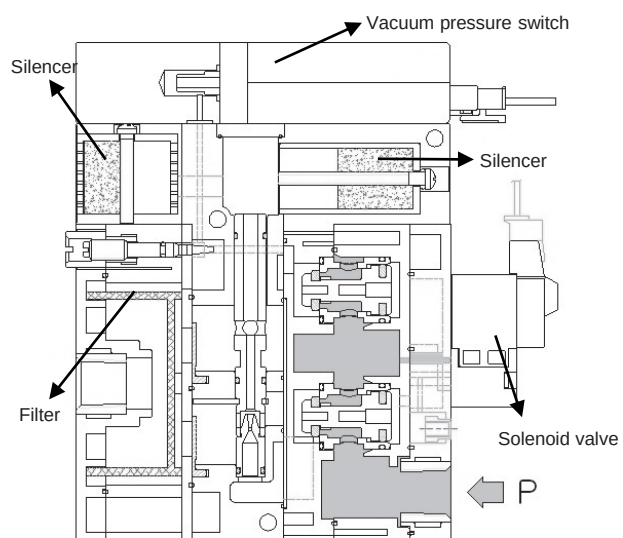
- ① Check the supply air volume and related conditions.
- ② Keep the piping as short as possible.
- ③ Use the largest possible fitting size.
- ④ If the supply air port is one-sided, use both sides if possible.

2. Performance degradation due to increased piping resistance

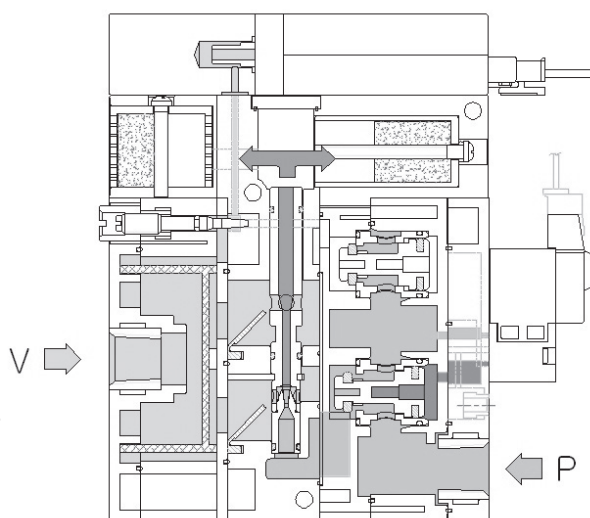
- ① Keep the piping as short as possible.
- ② Use the largest possible fitting size.
- ③ Check if the exhaust port is blocked due to internal or external factors.
- ④ Reduce the number of manifold stations in use.
- ⑤ Use individual exhaust for each station.

Operation diagram

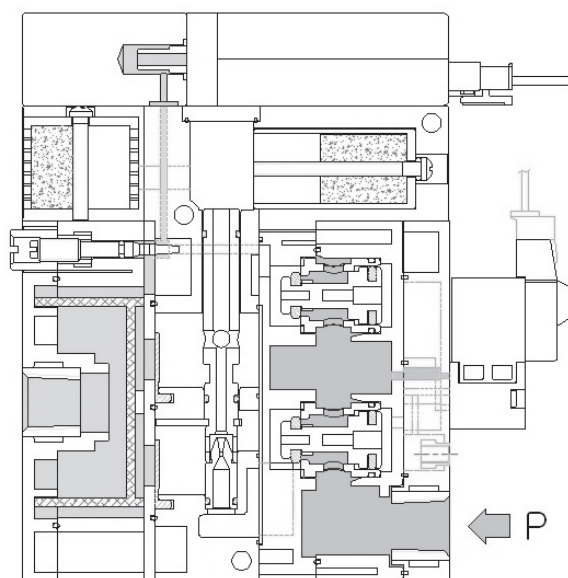
Stand by



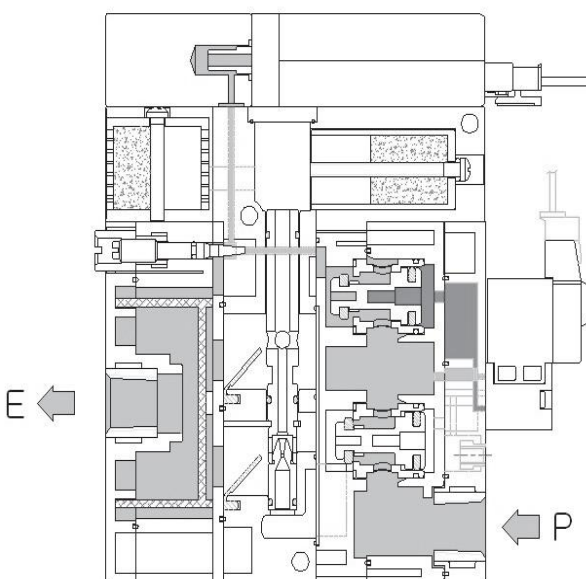
Generated vacuum



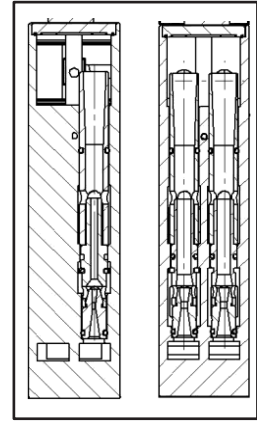
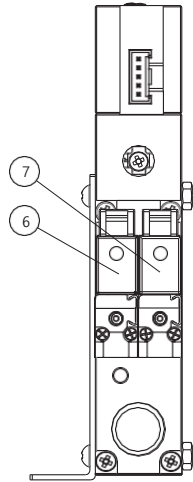
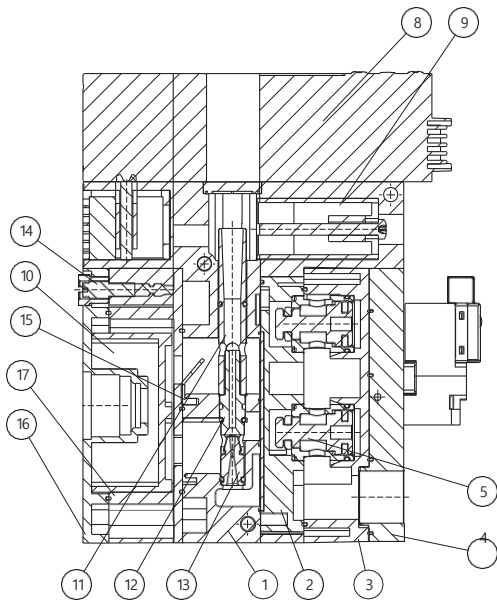
Vacuum maintaining



Vacuum released



Structure



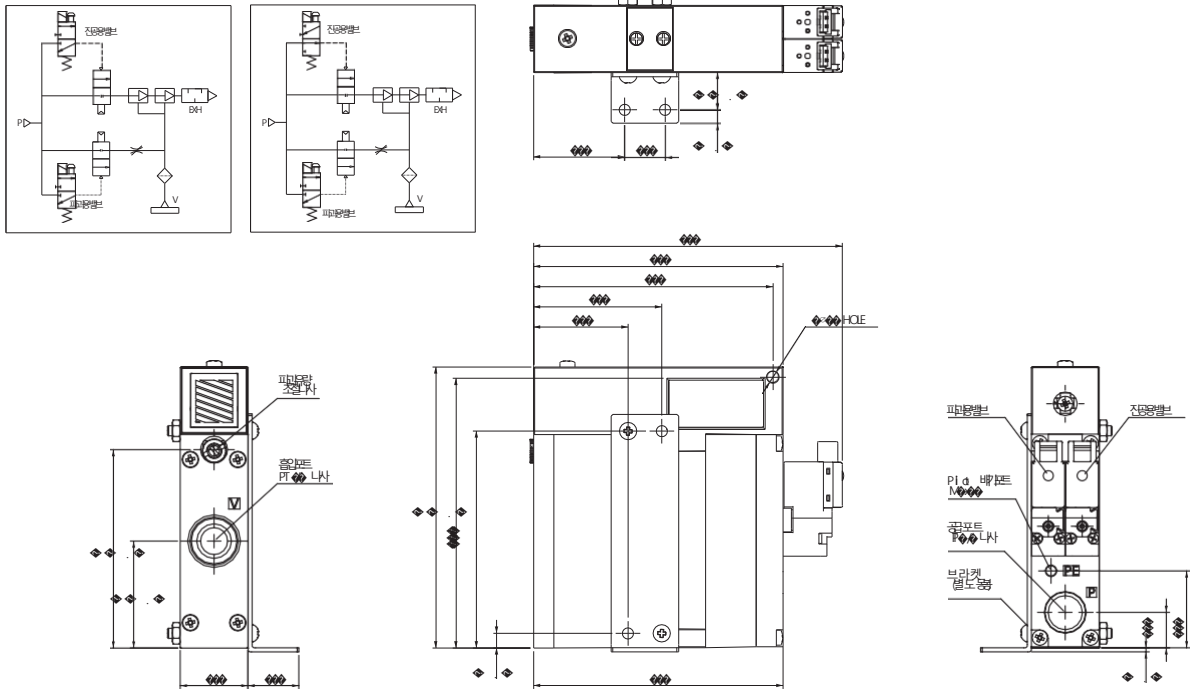
EK40,60,75,90 (1열 이젝터)
EK110,120 (2열 이젝터)

Components

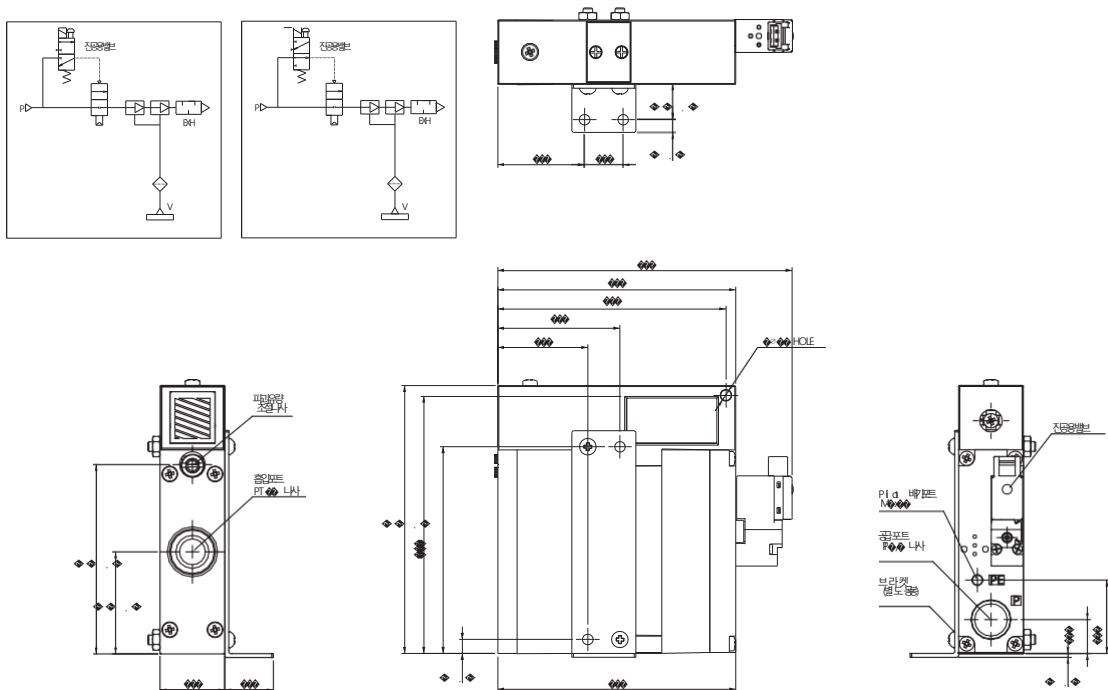
No	Part		Material	Note
①	Diffuser body		Zn	
②	Operator body (bottom)		PA	
③	Operator body (top)		PA	
④	Valve unit body		PPS	
⑤	Poppet valve ass'y		-	
⑥	Solenoid valve for releasing vacuum	Normal Close	-	DR100-*H
⑦	Solenoid valve for generating vacuum	Normal Close	-	DR100-*H
		Normal Open	-	DR120-*H
		Latching	-	LV290
⑧	Vacuum pressure switch		-	VPS-*_*-*B, VMS-*_*-*B
⑨	Silencer		PVA Sponge	
⑩	Vacuum suction filter		PE	
⑪	Diffuser		Al (color plated)	0.7, 1.0(yellow), 1.3, 1.5(white)
⑫	2nd nozzle			0.7(yellow), 1.0(blue)
⑬	1st nozzle			1.3(white), 1.5(red)
⑭	Flow rate adjusting bold		Al	
⑮	Vacuum backflow prevention pad		NBR	
⑯	Filter cover		PA	
⑰	Filter body		PA	

Dimensions

EK□-S01-□□-V1(V2)-□B

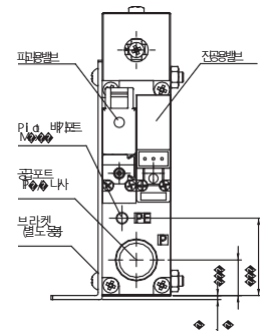
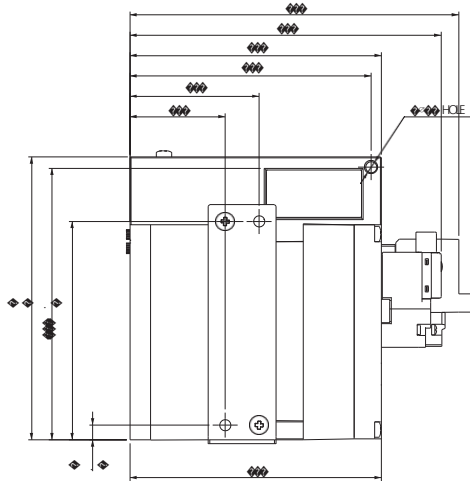
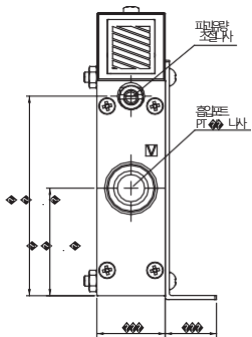
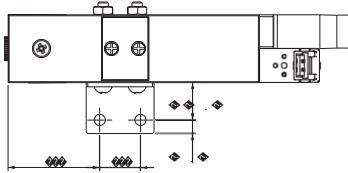
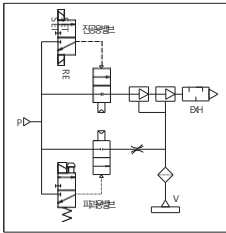


EK□-S01-□□-V3(V4)-□B

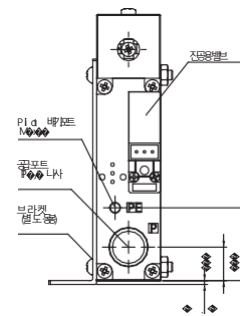
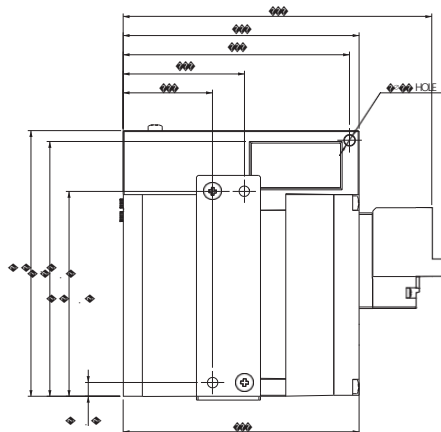
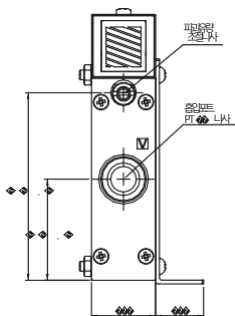
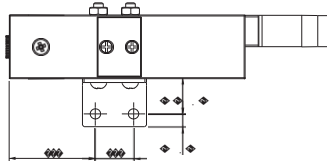
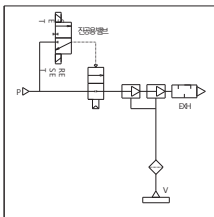


Dimensions

EK□-S01-□□-V5-□B

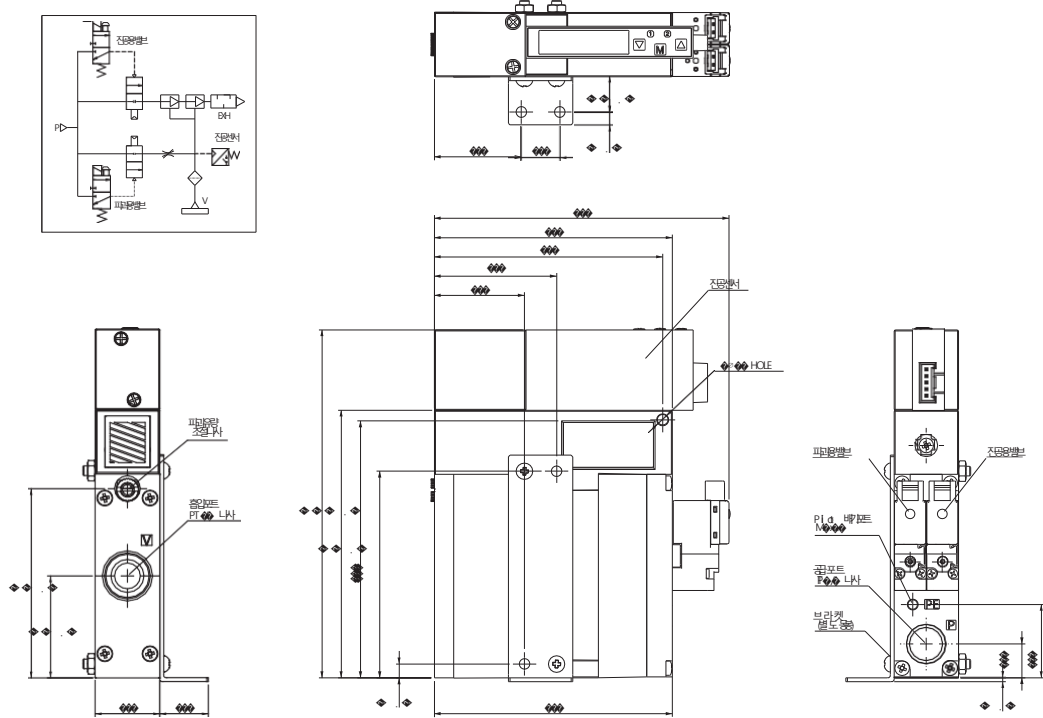


EK□-S01-□□-V6-□B

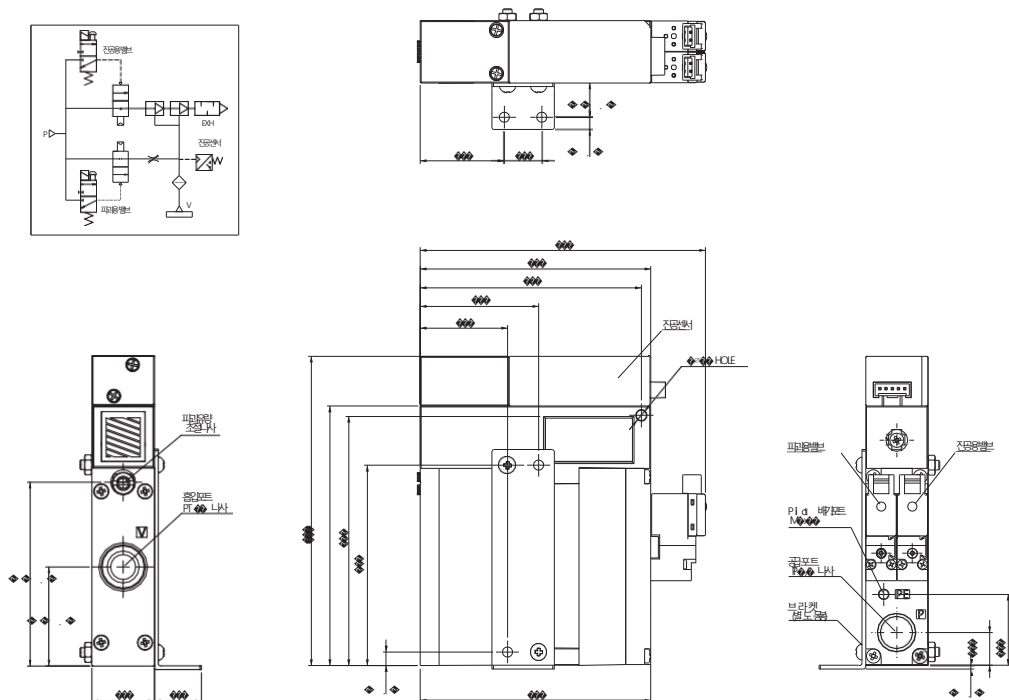


Dimensions

EK□-S01-□□-V1(V2)-NL(NK,PK)□-□B

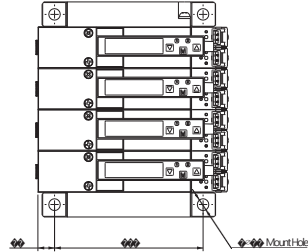
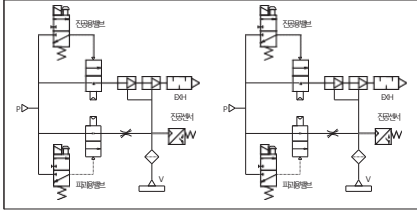


EK□-S01-□□-V1(V2)-N1(N2)□-□B



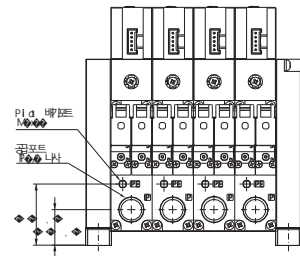
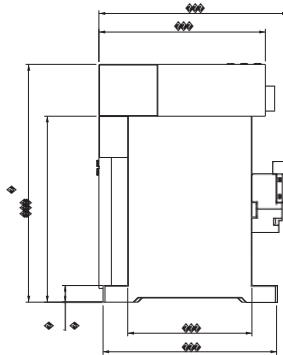
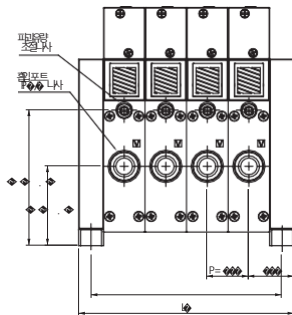
Dimensions

EK□-MA04-□□-V1(V2)-NL(NK,PK)□-□

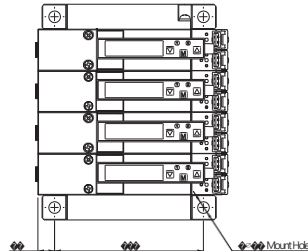
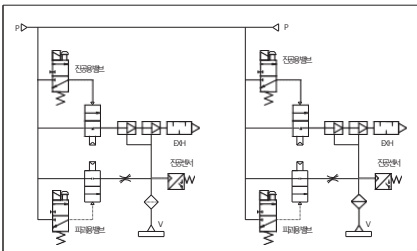


Dimensions

연수	1	2	3	4	5	6	7	8	9	10
L1	33.6	54.4	75.2	96	116.8	137.6	158.4	179.2	200	220.8
L2	45.6	66.4	87.2	108	128.8	149.6	170.4	191.2	212	232.8

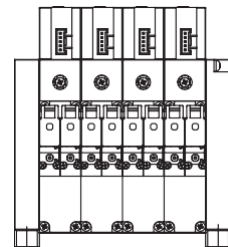
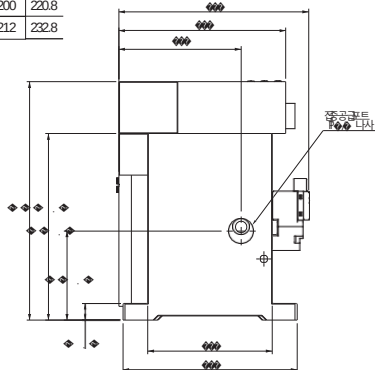
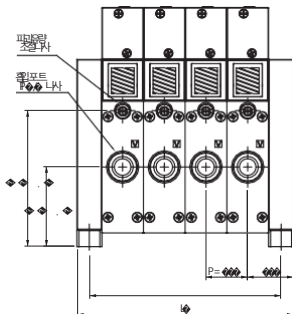


EK□-M04-□□-V1(V2)-NL(NK,PK)□-□



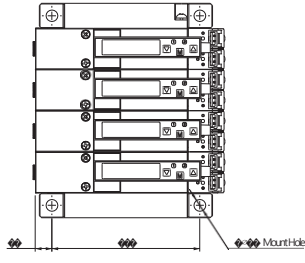
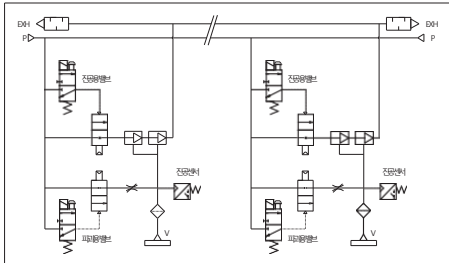
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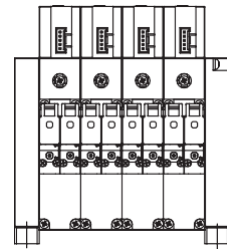
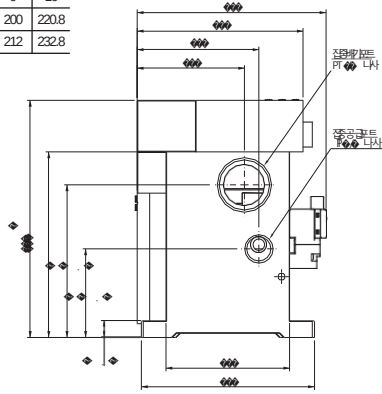
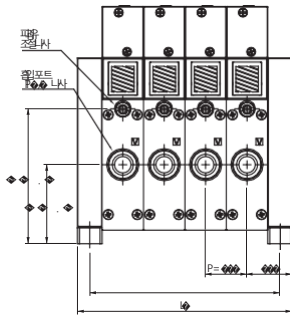
Dimensions

EK□-MB04-□□-V1(V2)-NL(NK,PK)□-□

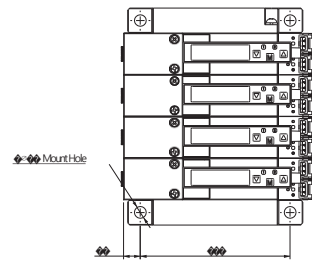
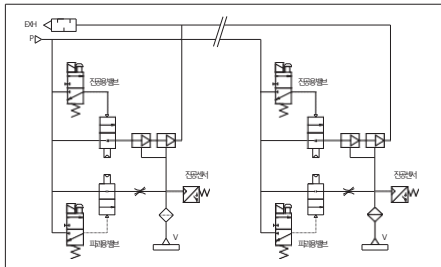


Dimensions

단수	1	2	3	4	5	6	7	8	9	10
L1	33.6	54.4	75.2	96	116.8	137.6	158.4	179.2	200	220.8
L2	45.6	66.4	87.2	108	128.8	149.6	170.4	191.2	212	232.8

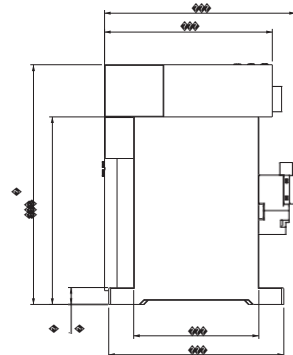
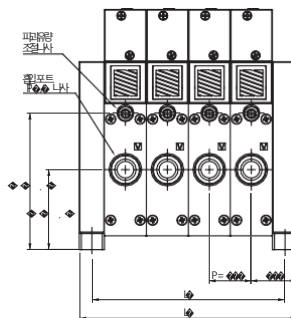
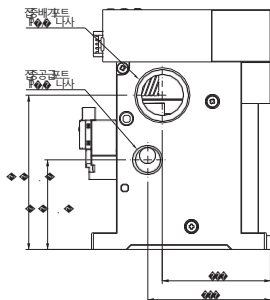


EK□-ML04-□□-V1(V2)-NL(NK,PK)□-□



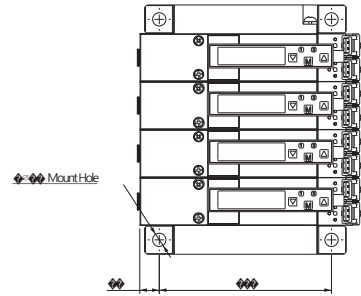
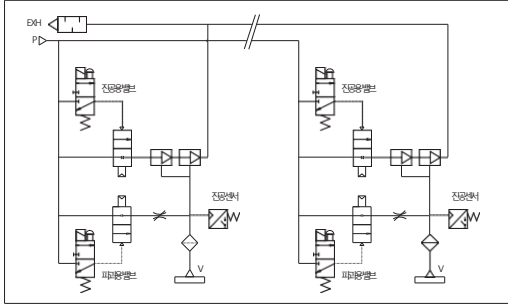
Dimensions

단수	1	2	3	4	5	6	7	8	9	10
L1	33.6	54.4	75.2	96	116.8	137.6	158.4	179.2	200	220.8
L2	45.6	66.4	87.2	108	128.8	149.6	170.4	191.2	212	232.8



Dimensions

EK□-MA04-□□-V1(V2)-NL(NK,PK)□-□



Dimensions

연수	1	2	3	4	5	6	7	8	9	10
L1	33.6	54.4	75.2	96	116.8	137.6	158.4	179.2	200	220.8
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