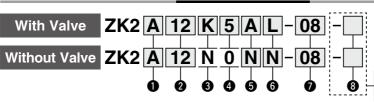
# Vacuum Unit **ZK2 Series**Ejector System



The ZK2 series has been remodeled. Click here for details.

Refer to page 64 for How to Order Manifold.

# How to Order Single Unit



Remains blank when no option is selected.

 System/Body Type Symbol System Body type Exhaust type Built-in silencer Silencer exhaust Port 1) В Single unit exhaust High-noise reduction G silencer exhaust Ejector system Complex Note 2) С exhaust Individual F For manifold port exhaust High-noise reduction

Note 1) Port size of exhaust port: mm: ø8

inch: ø5/16"

silencer

Note 2) The complex exhaust is a combined exhaust method of the common exhaust from the end plate and the direct exhaust from each station.

^			
22	Nomina	l Nozzle	Size

Symbol	System	Nominal size
07		ø0.7
10	Ejector system Note 3)	ø1.0
12	Ejector system	ø1.2
15		ø1.5

Note 3) Standard supply pressure for nozzle size 07 to 12 is 0.35 MPa, 15 is 0.4 MPa

4 Rated Voltage Note 7)				
Symbol	Voltage			
5	24 VDC			
6	12 VDC			
0	When 3 is "N"			

Note 7) Rated voltage for the supply and release

Symbol	Supply valve	Release valve	
Note 6)	N.C.	N.C.	
J	N.C.	None	
R	Self-holding release valve linked	N.C.	
N	None	None	

Note 4) Only non-locking type is available for the manual override for "K, J, R".

Note 5) Self-holding type maintains vacuum by instantaneous energization (20 ms or more). Stopping the vacuum turns on the release valve. (signal to stop vacuum not needed)

Drocouro	Concor/Digital	Drocouro	Curitoh	for Va	auum (	Connifin	otic

<b>9</b> Pi	Pressure Sensor/Digital Pressure Switch for Vacuum Specifications  Pressure sensor							
Symbol	Type	Pressure range [kPa]		Specifications				
Р	Pressure	0 to -101	Anal	og output 1 to 5 V	100			
Т	sensor	-100 to 100	Anal	og output 1 to 5 V			ļ	
Α				Unit selection function Note 8)				
В		0 to -101		SI unit only Note 9)	Digital pres switch for v			
С	Digital	010-101	PNP	Unit selection function Note 8)	- CHILLIAN TOT V	<u></u>		
D	pressure switch for vacuum		2 outputs	SI unit only Note 9)	]	7		
E			NPN	Unit selection function Note 8)	]			
F		-100 to 100	2 outputs	SI unit only Note 9)	Digital pressure		ssure switch	
Н			PNP	Unit selection function Note 8)	١ ـ	for vacuur	m with energy	
J				SI unit only Note 9)	1 #	saving fur	iction	
K	Digital pressure		NPN	Unit selection function Note 8)	M /	7		
Q	switch for vacuum	-100 to 100	1 output	SI unit only Note 9)		7		
R	with energy saving	-100 10 100	PNP	Unit selection function Note 8)		1		
S	function Note 10)		1 output	SI unit only Note 9)			11	
N	V digita							

Note 8) Unit selection function is not available in Japan due to new measurement law. Note 9) Fixed unit: kPa

Note 10) When "K, Q, R, S" is selected, select "K" for 

Combination of Supply Valve and Release Valve. Select "W" or "L3" for 

...

н

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
   PS: Pilot pressure supply port
- PE: Pilot pressure exhaust port
   For determined to the pressure of the

For details ⇒ Page 79

ZK2 ZQ ZR

ZB

ZA

ZX

ZH

-X267 ZHP

ZU VQD-V

# 6 Supply Valve/Release Valve/Digital Pressure Switch for Vacuum Connector Specifications

0	3For supply valve/release valve Note 11)		6 Lead wire with connector	
Symbol	Connector type	Lead wire with connector	for pressure switch/ sensor Note 14)	
С	Common wiring (Plug-in)	×	O Note 15)	
C1	(For manifold)	Ŷ	× Note 16)	
L		O Note 12)	O Note 15)	
L1	L-type plug connector	× Note 13)	O Note 15)	
L2		O Note 12)	× Note 16)	
L3		× Note 13)	× Note 16)	
w			ire for switch with aving function	
Υ	Non-valve (without supply/ release valve) When "N" is		O Note 15)	
Y1	selected for		×	
N	and 6 (Pressure Sen	both (3) (Combination of sor/Digital Pressure Switch valve, without switch, press		

# Single Unit and Options Note 27)

Siligle	OHIL 6	and Opti	ons				
0	0	6	0	6	6	0	8
System/	Nominal	Combination of supply	Rated		Supply valve/release valve/digital pressure	Vacuum (V)	Optional
Body type	nozzle size	valve and release valve	voltage	switch for vacuum specifications	switch for vacuum connector specifications	port	specifications
				P/T	L/L1		
		к		A/B/C/D/E/F/H/J	L/L1/L2/L3		B/D/J/K/W
		N.		N	L2/L3		
				K/Q/R/S	L3/W		B/D/J/K
			5	P/T	L/L1		
		R	6	A/B/C/D/E/F/H/J	L/L1/L2/L3		B/D/J/K/W
A/B/G				N	L2/L3		
				P/T	L/L1		
		J		A/B/C/D/E/F/H/J	L/L1/L2/L3		B/W
				N	L2/L3		
				P/T	Y		
	0,7	N	0	A/B/C/D/E/F/H/J	Y/Y1	0,6	B/W
	10			N	N	08	
	12			P/T	C/L/L1	07	
	15	к		A/B/C/D/E/F/H/J	C/C1/L/L1/L2/L3	09	J/K/L/P/W
	''	N.		N	C1/L2/L3	03	
				K/Q/R/S	L3/W		J/K/L/P
			5	P/T	C/L/L1		
		R	6	A/B/C/D/E/F/H/J	C/C1/L/L1/L2/L3		J/K/L/P/W
C/F/H				N	C1/L2/L3		
				P/T	C/L/L1		
		J		A/B/C/D/E/F/H/J	C/C1/L/L1/L2/L3		L/W
				N	C1/L2/L3		
				P/T	Y		
		N	0	A/B/C/D/E/F/H/J	Y/Y1		L/W
				N	N		

Note 27) When "J" is selected for ③ Combination of Supply Valve and Release Valve, "J or K" cannot be selected for ③ Optional Specifications.

For options not in the table, please contact SMC.

\*Refer to page 97 when mounting a single unit onto the DIN rail.



# Vacuum (V) Port Note 17)

Symbol	Type	Port size	
06	Metric	ø6 One-touch fitting	
08	size	ø8 One-touch fitting	
07	Inch	ø1/4" One-touch fitting	v
09	size	ø5/16" One-touch fitting	

Note 17) Supply port (PV) size of single unit: ø6 (mm), ø1/4" (inch)

Note 11) Solenoid valve with light/surge voltage suppressor

Note 12) Standard lead wire length for solenoid valve is 300 mm.

Note 13) For lead wire lengths other than standard, select "L1 or
L3", and order the connector assembly with desired

length. (Refer to page 81.)

Note 14) Standard lead wire length for pressure sensor is 3 m. Standard lead wire length with connector for pressure switch for vacuum and the lead wire length for switch with energy saving function is 2 m.

Note 15) Select "C, L, L1, Y" when the pressure sensor (P, T) is selected for **@** Pressure Sensor/Digital Pressure Switch for Vacuum Specifications.

Since only grommet type is available for the pressure

sensor, sensor without lead wire cannot be selected.

Note 16) Select when no pressure switch for vacuum, pressure sensor, or pressure switch for vacuum with connector without lead wire is used.

# Optional Specifications Note 18, 26)

_	optional opcomo			
Symbol	Type	Symbol	Туре	
Nil	Without option	L	Manifold individual	
_	With one branket for mounting a cinals unit		supply specification Note 20,2	
В	(Mounting screw is attached.)	Р	Manifold common release	
_	With individual release pressure supply		pressure supply specification Note	
D	(PD) port Note 19)	w	With exhaust interference	
	J Vacuum break flow adjusting needle Round lock nut type		prevention valve Note 23, 24, 25, 2	
J				
к	Vacuum break flow adjusting needle			
I.	Screwdriver operation type			

Note 18) When more than one option is selected, list the option symbols in an alphabetical order. Example) -BJ Refer to page 91 for Function/Application.

Note 19) Only M3 is available for PD port size. Use One-touch fitting (M-3AU-4) or barb fitting for piping. (O.D.: within Ø6.2)

Note 20) Select when a PV pressure of 0.3 MPa or lower is required.

Note 21) Select body for manifold. Select "L" for manifold type. When the common supply and individual supply are mixed, please contact SMC.

Note 22) When "-D" is selected for manifold option, select 
"-P" option for the single unit model number.

Note 23) To prevent backflow of the manifold common exhaust, not for holding vacuum. This opion does not completely stop the backflow of the exhaust air. Select port exhaust type depending on purpose.

Note 24) When "J" is selected for € Combination of Supply Valve and Release Valve and "W" (with exhaust interference prevention valve) is selected for € Optional Specifications, install a release valve or vacuum breaker.

Note 25) When "K, Q, R, S" is selected for 

Pressure Sensor/Digital Pressure Switch for Vacuum Specifications, models with exhaust interference prevention valve is provided. So, it is not necessary to select "W".

Note 26) For ① System/Body type "F" or "H," when "L" is selected for ② Option, the vacuum break flow-adjusting needle option "K" or "JK" can be additionally selected for increased workability.

ZK2 ZQ

ZB

ZΑ

ZX

ZM

ZL

ZH -X267 ZHP

ZU

VOD-V

# **Specifications**

# **General Specifications**

Operating temperature range		-5 to 50°C (with no condensation)	
Fluid		Air	
Vibration Note 1)	30 m/s <sup>2</sup>	Without pressure sensor/switch for vacuum With pressure sensor	
resistance	20 m/s <sup>2</sup>	With switch for vacuum	
Impact Note 2)	150 m/s <sup>2</sup>	Without pressure sensor/switch for vacuum With pressure sensor	
resistance	100 m/s <sup>2</sup>	With switch for vacuum	

Note 1) The characteristics are satisfied when tested for 2 hours in each of the X, Y and Z directions at 10 to 500 Hz without energization. (Initial value)

Note 2) The characteristics are satisfied when tested one time in each of the X, Y and Z directions without energization. (Initial value)

# Valve Common Specifications

Valve model Note 3)	ZK2-VA□R	ZK2-VA□R ZK2-VA□K			
Type of actuation Note 4)	Self-holding supply valve Release valve N.C. (Linked)	Supply valve N.C. Release valve N.C.	Supply valve N.C. Without release valve		
Valve configuration	Pilot operate	d dual 2 port	Pilot operated 2 port		
Operating pressure range	0.3 to 0.6 MPa				
Valve construction	Poppet seal				
Manual override	Push type				
Rated voltage		24 VDC, 12 VDC			
Power consumption	n 0.35 W				
Lead wire	Cross	s section: 0.2 mm <sup>2</sup> (AW	(G24)		
(ZK2-LV**-A)		Insulator O.D.: 1.4 mm			

Note 3) Refer to 6 Valve assembly on page 81 for the valve model number. Note 4) ZK2-VA□R: After instantaneous energization of the supply valve (20 ms or more), ON state is maintained without energization. Supply

valve turns off simultaneously when the release valve turns on. ZK2-VA Supply valve turns off when is not energized. Select this type when energy saving switch is used.

# Fiector Specifications

Ejector Specifications							
Item Model			ZK2□07	ZK2□10	ZK2□12	ZK2□15	
Nozzle diamete	er	[mm]	0.7	1.0	1.2	1.5	
Note 5)	Port exhaust	[L/min (ANR)]	34	56	74	89	
Max. suction	Silencer exhaust/Complex exhaust	[L/min (ANR)]	29	44	61	67	
flow	High-noise reduction silencer exhaust	[L/min (ANR)]	34	56	72	83	
Air consumption	Air consumption Note 5)		24	40	58	90	
Maximum vacu	ium pressure Note 5)	[kPa]	-91				
Supply pressure range Note 6) [MPa]		[MPa]	0.3 to 0.6				
Standard supply pressure Note 7) [MPa]		0.35 0.4 (0.37			0.4 (0.37)		

Note 5) Values at the standard supply pressure. Values are based on standard of SMC measurements. They depend on atmospheric pressure (weather, altitude, etc.) and measurement method. Note 6) The value in ( ) is for without valve.

Note 7) The value in () is for without valve. For nozzle size 07 to 12, the value is common to the ejectors with valve and without valve.

# Maximum Number of Manifold Stations that Can Operate Simultaneously Note 8)

maximum rumbor or marmora otations that our operate official outper							
Item Model (Nozzle siz		Model (Nozzle size)	ZK2□07	ZK2□10	ZK2□12	ZK2□15	
		Supply from one side	8	5	4	3	
Air pressure		Supply from both sides	10	7	5	5	
supply (PV) port ø8. ø5/16"	Individual port exhaust,	Supply from one side	8	6	6	3	
,	High-noise reduction silencer exhaust	Supply from both sides	10	9	9	6	

Note 8) As long as the number of stations operated simultaneously is the value on the table or less, then the manifold is available up to 10 stations.

# Noise level (Reference values)

Tolog lover (Tologoniae Valado)					
Item	Model	ZK2□07	ZK2□10	ZK2□12	ZK2□15
Noise level	ZK2G (High-noise reduction silencer exhaust)	46	55	63	69
[dB(A)]	ZK2A (Silencer exhaust)	59	66	75	76

Actual values based on SMC's measurement conditions (Not guaranteed values)

# Weight

# Single Unit

Single Unit	
Single unit model	Weight [g]
	83
ZK2A \cong \kappa \cong \kappa \cong \kappa \cong \kappa \	81
ZK2A□□N0NN (Ejector system, Single unit, Without valve)	54
ZK2 (One station for manifold, Without pressure sensor/switch for vacuum)	85

Example) 5-station manifold with pressure sensors 85 g x 5 pcs. + 5 g x 5 pcs. + 141 g = 591 g

# Pressure Sensor/Pressure Switch for Vacuum

Pressure sensor/Pressure switch for vacuum model	Weight [g]			
ZK2-PS□-A (Except cable portion)	5			
ZK2-ZS□-A (Except lead wire assembly with connector)				
ZK2-ZSV□-A (Except special lead wire assembly with connector)				

# Manifold Rase

Marinola Base										
	1 station	2 stations	3 stations	4 stations	5 stations	6 stations	7 stations	8 stations	9 stations	10 stations
Weight [a]	129	132	135	138	141	144	147	149	152	155

# Calculation of Weight for the Manifold Type

(Single unit weight x Number of stations) + (Pressure sensor/Pressure switch for vacuum weight x Number of stations) + Manifold base

# Ejector Exhaust Characteristics/Flow Rate Characteristics (Representative value)

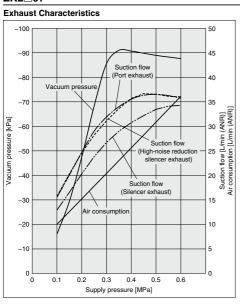
\*The flow rate characteristics correspond to the standard supply pressure.

30

40

40

# ZK2□07



# Flow Rate Characteristics -100 -10

10

٥

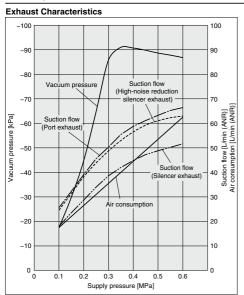
0 L

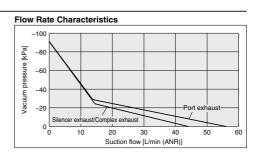
# Flow Rate Characteristics -100 -80 -80 -80 High-noise reduction silencer exhaust

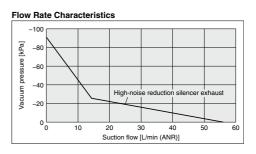
Suction flow [L/min (ANR)]

Suction flow [L/min (ANR)]

# ZK2□10







# Ejector Exhaust Characteristics/Flow Rate Characteristics (Representative value)

\*The flow rate characteristics correspond to the standard supply pressure.

ZK2

ΖB

ZA

ZX

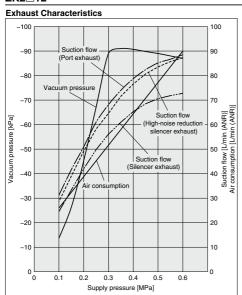
ZL

ZH -X2<u>67</u>

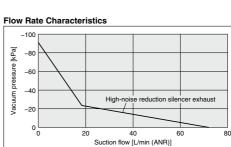
ZHP

ZU VOD-V

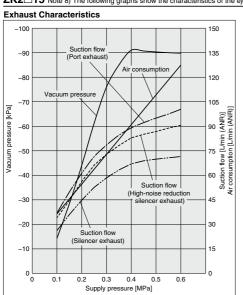
# ZK2□12

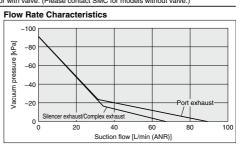


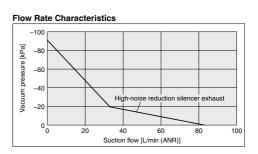
# Flow Rate Characteristics -100 Vacuum pressure [kPa] -80 -60 -40 -20 0 L 20 80 Suction flow [L/min (ANR)]



ZK2 15 Note 8) The following graphs show the characteristics of the ejector with valve. (Please contact SMC for models without valve.)



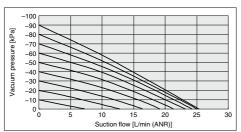




# **ZK2** Series

# Vacuum Pump System Flow Rate Characteristics/ZK2P00

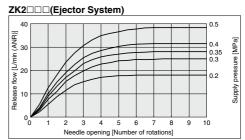
The graph shows the suction flow rate characteristics of the vacuum pump system at different vacuum pressures.



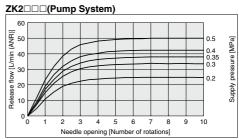
The actual suction flow at the point of suction varies depending on the piping conditions to the vacuum port. (The above graph shows the value when V port is Ø8.)

# **Vacuum Release Flow Rate Characteristics**

The graph shows the flow rate characteristics at different supply pressures when the vacuum break flow adjusting needle is open from the fully closed state.



The actual suction flow at the point of suction varies depending on the piping conditions to the vacuum port. (The above graph shows the value of the ZK2B07.)



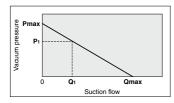
The actual suction flow at the point of suction varies depending on the piping conditions to the vacuum port.

# Vacuum Pump System Flow Rate Characteristics of Flow Path and Vacuum Release

Port size		Flow rate characteristics of V → PV (Vacuum side)		Flow rate characteristics of PS → V (Vacuum release side)(*)			
PV port	V port	C[dm3/(s-bar)]	b	Cv	C[dm3/(s-bar)]	b	Cv
ø6	ø8	0.39	0.14	0.09	0.20	0.06	0.04

(\*) When needle is fully open

# How to Read Flow Rate Characteristics Graph



Flow rate characteristics are expressed in ejector vacuum pressure and suction flow. If suction flow changes, the vacuum pressure will also be changed. Normally this relationship is expressed in ejector standard operating pressure use. In graph, **Pmax** is maximum vacuum pressure and **Qmax** is maximum suction flow. The values are specified according to catalog use. Changes in vacuum pressure are expressed in the below order.

- When ejector suction port is covered and made airtight, suction flow becomes zero and vacuum pressure is at maximum value (Pmax).
- When suction port is opened gradually, air can flow through, (air leakage), suction flow increases, but vacuum pressure decreases. (condition P<sub>1</sub> and Q<sub>1</sub>)
- When suction port is opened further and fully opened, suction flow moves to maximum value (Qmax), but vacuum pressure is near zero (atmospheric pressure).

As described above, the vacuum pressure changes when the suction flow changes. In other words, when there is no leakage from the vacuum (V) port, the vacuum pressure can reach its maximum, but as the amount of leakage increases, the vacuum pressure decreases. When the amount of leakage and the maximum suction flow become equal, the vacuum pressure becomes almost zero. In the case when ventilative or leaky work should be adsorbed, take note that vacuum pressure will not rise.

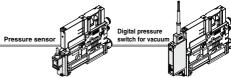


ZK2 ZQ

ΖB ZA ZX ZM ZL

ZH ZH ZH -X267 ZHP ZU VQD-V

# Pressure Sensor/Digital Pressure Switch for Vacuum Specifications



Pressure Sensor/ZK2-PS $\square$ -A (For details, refer to the PSE series in the Best Pneumatics No. 8 catalog, and the Operation Manual.)

Model (S	Sensor unit: Standard model number)	ZK2-PS1-A (PSE541)	ZK2-PS3-A (PSE543)			
Rated pressi	ure range	0 to -101 kPa	-100 to 100 kPa			
Proof pressu	ıre	500	kPa			
Applicable fl	uid	Air/Non-corrosive ga	s/Incombustible gas			
Output volta	ge	1 to 5	VDC			
Output impe	dance	Approx	. 1 kΩ			
Power suppl	ly voltage	10 to 24 VDC ±10%, Ripple (P-P) 10% or less				
Current cons	sumption	15 mA or less				
Accuracy		±2% F.S. (Ambient temperature at 25°C)				
Linearity		±0.4% F.S. or less				
Repeatability	у	±0.2% F.S. or less				
Effect of pov	ver supply voltage	±0.8% F.S. or less				
Temperature	characteristics	±2% F.S. or less (Ambient to	emperature: 25°C reference)			
Material	Case	Resin case				
waterial	Pressure sensing section	Sensor pressure receiving area: Silicon, O-ring: HNBR				
Lead wire		Oilproof heavy-duty cable 2.7 x 3.2 mm (Elliptic), 0.15 mm <sup>2</sup> 3 cores 3 m				

# Digital Pressure Switch for Vacuum/ZK2-ZS□□□-A

Maximum load current   80 mA   28 V (with NPN output)	(For details, refer	to the ZSE/ISE10 series in the Best Pneum	natics No. 8 catalog, and the Operation Manual.)				
Set pressure range/Pressure display range   10 to -105 kPa   -105 to 105 kPa   -105 to 105 kPa	Model (Sw	tch unit: Standard model number)	ZK2-ZSE□□□-A (ZSE10)	ZK2-ZSF□□□-A (ZSE10F)			
Proof pressure   Sool kPa	Rated pressure	range	0 to -101 kPa	-100 to 100 kPa			
Smallest settable increment	Set pressure ra	nge/Pressure display range	10 to -105 kPa	-105 to 105 kPa			
Applicable fluid	Proof pressure		50	0 kPa			
Power supply voltage	Smallest settab	ole increment	0.	1 kPa			
Current consumption         40 mA or less           Switch output         NPN or PNP open collector 2 outputs (seelectable)           Maximum load current         80 mA           Maximum applied voltage         28 V (with NPN output)           Residual voltage         2 v or less (with load current at 80 mA)           Response time         2.5 ms or less (Anti-chattering function working: 20, 100, 500, 1000 or 2000 ms selected)           Short circuit protection         Yes           Repeatability         ±0.2% F.S. ±1 digit           Hysteresis         Mysteresis mode         Variable (0 or above) Note)           Window comparator mode         Variable (0 or above) Note)           Display         3 1/2 digit, 7-segment LED, 1-color display (Red)           Display accuracy         ±2% F.S. ±1 digit (Ambient temperature at 25 ±3°C)           Indicator light         Lights up when output is turned ON. OUT1: Green, OUT2: Red           Environmental resistance         IP40           Operating temperature range         Operating: 5 to 50°C, Storage: -10 to 60°C (with no freezing or condensation)           Operating temperature range         Operating/Storage: 35 to 85% RH (with no condensation)           Withstand voltage         1000 VAC for 1 minute between terminals and housing           Insulation resistance         50 MΩ or more (500 VDC measured via megohmmeter)	Applicable fluid	1	Air/Non-corrosive of	pas/Incombustible gas			
Maximum load current   Maximum load current   Maximum applied voltage   28 V (with NPN output)	Power supply v	voltage	12 to 24 VDC ±10%, Ripple (p-p) 10% or	less (Protected against reverse connection)			
Maximum load current   80 mA   28 V (with NPN output)	Current consu	nption	40 m.	A or less			
Maximum applied voltage   28 V (with NPN output)	Switch output		NPN or PNP open colle	ctor 2 outputs (selectable)			
Residual voltage		Maximum load current	80	) mA			
Response time   2.5 ms or less (Anti-chattering function working: 20, 100, 500, 1000 or 2000 ms selected)   Yes		Maximum applied voltage	28 V (with	NPN output)			
Short circuit protection   Yes		Residual voltage	2 V or less (with load current at 80 mA)				
Repeatability		Response time	2.5 ms or less (Anti-chattering function working: 20, 100, 500, 1000 or 2000 ms selected)				
Hysteresis mode   Variable (0 or above) Note:		Short circuit protection	Yes				
Window comparator mode   Variable (0 or above) **comparator mode (0 or above) **compa	Repeatability		±0.2% F	S. ±1 digit			
Window comparator mode   Single   Si	Hyetoroeie	Hysteresis mode	Variable (0 or above) Note)				
12% F.S. ±1 digit (Ambient temperature at 25 ±3°C)     Indicator light	Tiysteresis	Window comparator mode	variable (0 or above),				
Lights up when output is turned ON. OUT1: Green, OUT2: Red   P40	Display		3 1/2 digit, 7-segment LED, 1-color display (Red)				
Environmental resistance   Departing temperature range   Operating (Storage: -10 to 60°C (with no freezing or condensation)	Display accura	су	±2% F.S. ±1 digit (Ambient temperature at 25 ±3°C)				
Derating temperature range   Operating: -5 to 50°C, Storage: -10 to 60°C (with no freezing or condensation)	Indicator light		Lights up when output is turned ON. OUT1: Green, OUT2: Red				
Operating humidity range   Operating/Storage: 35 to 85% RH (with no condensation)		Enclosure	l	P40			
resistance         Operating humidity range         Operating/Storage: 35 to 85°R HI (with no condensation)           Withstand voltage         1000 WAC for 1 minute between terminals and housing           Insulation resistance         50 MΩ or more (500 VDC measured via megohimmeter) between terminals and housing           Temperature characteristics         ±2% F.S. (at 25°C in an operating temperature range of -5 and 50°C)           Lead wire         Oilproof heavy-duty vinyl cable           5 cores, Cross section: 0.15 mm² (AWG26), Insulator O.D.: 1.0 mm	Environmental	Operating temperature range					
Withstand voltage   1000 VAC for 1 minute between terminals and housing							
Temperature characteristics     ±2% F.S. (at 25°C in an operating temperature range of –5 and 50°C)       Lead wire     Oilproof heavy-duty vinyl cable 5 cores, Cross section: 0.15 mm² (AWG26), Insulator O.D.: 1.0 mm	i colotalice		1000 VAC for 1 minute be	tween terminals and housing			
Lead wire Oilproof heavy-duty vinyl cable 5 cores, Cross section: 0.15 mm² (AWG26), Insulator O.D.: 1.0 mm		Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing				
Lead wire 5 cores, Cross section: 0.15 mm² (AWG26), Insulator O.D.: 1.0 mm	Temperature c	naracteristics	±2% F.S. (at 25°C in an operating temperature range of –5 and 50°C)				
Standards Compliant with CE marking, RoHS	Lead wire						
	Standards		Compliant with	CE marking, RoHS			

Note) If the applied pressure fluctuates around the set value, the hysteresis must be set to a value more than the fluctuating width, otherwise, chattering will occur.

# Digital pressure switch for vacuum with energy

saving function

# **Digital Pressure Switch for Vacuum Specifications**

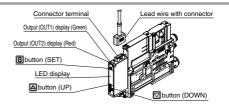
# Digital Pressure Switch for Vacuum Ejector with Energy Saving Function

rightan i roodan o'r racaam Ejector man Energy Caving i ancien				
	Model	Specifications		
Rated pressure	range	-100 to 100 kPa		
Set pressure range		-105 to 105 kPa		
Proof pressure		500 kPa		
Smallest settabl	e increment	0.1 kPa		
Applicable fluid		Air/Non-corrosive gas/Incombustible gas		
Power supply vo	oltage	12 to 24 VDC ±10% Ripple (P-P) 10% or less (Protected against reverse connection)		
Current consum	ption	40 mA or less		
Switch output		NPN or PNP open collector OUT1: General purpose, OUT2: Valve control		
	Maximum load current	80 mA		
	Maximum applied voltage	26.4 VDC		
Residual voltage Response time		2 V or less (with load current at 80 mA)		
		2.5 ms or less (Anti-chattering function working: 20, 100, 500, 1000 or 2000 ms selected)		
	Short circuit protection	Yes		
Repeatability		±0.2% F.S. ±1 digit		
Hysteresis	Hysteresis mode	Variable (0 or above) Note)		
Display		3 1/2 digit, 7-segment LED, 1-color display (Red)		
Display accurac	у	±2% F.S. ±1 digit (Ambient temperature at 25 ±3°C)		
Indicator light		Lights up when output is turned ON. OUT1: Green, OUT2: Red		
	Enclosure	IP40		
Environmental	Operating humidity range	5 to 50°C		
resistance	Withstand voltage	1000 VAC for 1 minute between terminals and housing		
	Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing		
Temperature cha	aracteristics	±2% F.S. (at 25°C in an operating temperature range of 5 and 50°C)		
Lead wire	·	Cable: 5 cores ø3.5, 2 m Cross section: 0.15 mm² (AWG26) Insulator O.D.: 1.0 mm		
Standards		CE marking, RoHS		

Note) If the applied pressure fluctuates around the set value, the hysteresis must be set to a value more than the fluctuating width, otherwise, chattering will occur.

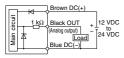
# Description (Pressure Switch for Vacuum)

Output (OUT1) display (Green)	Lights up when OUT1 is turned ON.
Output (OUT2) display (Red)	Lights up when OUT2 is turned ON.
LED display	Displays the current pressure, set mode and error code.
△button (UP)	Selects the mode or increases the ON/OFF set-value.
Edution (UP)	Use for switching to the peak display mode.
EL	Selects the mode or decreases the ON/OFF set-value.
<b>▽</b> button (DOWN)	Use for switching to the bottom display mode.
Sbutton (SET)	Use for changing the mode or setting the set-value.



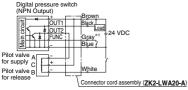
# Internal Circuit and Wiring Example

### ■Pressure Sensor ZK2-PS□-A

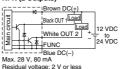


Voltage output type: 1 to 5 V Output impedance: Approx. 1  $k\Omega$ 

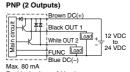
### ■ Pressure Switch for Vacuum with Energy Saving Function ZK2-ZSVA□□-A NPN (Output)



### ■Pressure Switch for Vacuum ZK2-ZS□A□□-A NPN (2 Outputs)



Residual voltage: 2 V or less

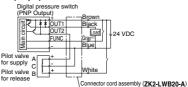


Residual voltage: 2 V or less

ZK2-ZS□B□□-A

\*The FUNC terminal is connected when using the copy function. (Refer to the Operation Manual.)

### ZK2-ZSVB□□-A PNP (Output)



\*1 The gray wire (FUNC) is connected when operating the supply valve by energy-saving control (for workpiece adsorption). (Refer to the Operation Manual.)

ZK2

ZQ

ZB

ZA

ZX

ZM

ZL

ZH

ZH

ZH

-X267

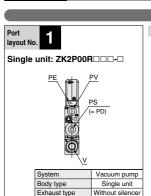
ZHP

ZU

VQD-V

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump) PS: Pilot pressure supply port PD: Individual release pressure supply port
   V: Vacuum port
   EXH: Exhaust port
- PE: Pilot pressure exhaust port For details ⇒ Page 79

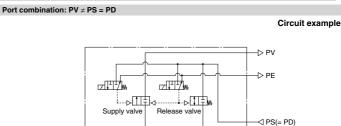
\*System depends on vacuum source (vacuum pump/vacuum ejector).



Vacuum pres Exhaust

Release pressure Same pressure as PS

**Port Layout** 



Standard Products

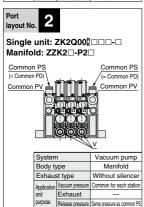
**\**#

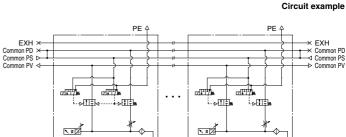
Port combination: Common PV ≠ Common PS = Common PD

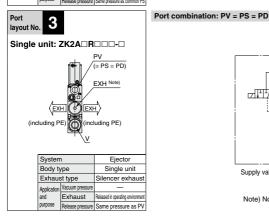
Supply valve: Self-holding type Release valve: N.C.

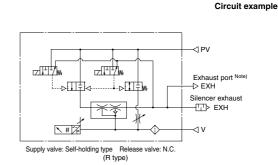
(R type)











Supply valve: N.C. Release valve: N.C.

(K type)

Refer to page 79 for the purpose of port and the operating pressure range.



Note) Nozzle size: 12, 15

Single unit: ZK2B J ====

System

Body type

Exhaust type

Application Vacuum pre-

= PS = PD)

Ejector

Single unit

Port exhaust

(including PE)

Port Layout

layout No.

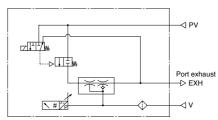
- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
  PS: Pilot pressure supply port
  PD: Individual release pressure supply port
  V: Vacuum port
  EXH: Exhaust port
- PE: Pilot pressure exhaust port
   For details ⇒ Page 79

\*System depends on vacuum source (vacuum pump/vacuum ejector).

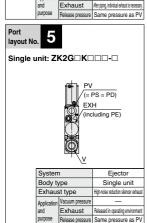
# Standard Products



# Circuit example

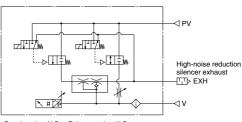


Supply valve: N.C. Release valve: Without release valve (J type)



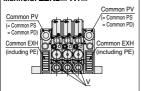
# Port combination: PV ( = PS = PD)

# Circuit example



Supply valve: N.C. Release valve: N.C. (K type)



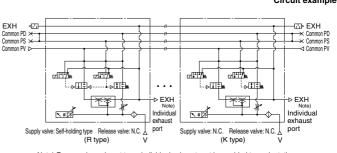


Note) The complex exhaust is a combined exhaust method of the common exhaust from the end plate and the direct exhaust from each station.

System	1	Ejector		
Body ty	/pe	Manifold		
Exhaus	st type	Complex exhaust Note)		
Application	Vacuum pressure	Common for each station		
	Exhaust	Released in operating environment		
purpose	Release pressure	Same pressure as common PV		

# Port combination: Common PV = Common PS = Common PD

# Circuit example



Note) For complex exhaust type, individual exhaust port is provided to each station.



# Vacuum Unit **ZK2** Series

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump) PS: Pilot pressure supply port
- PD: Individual release pressure supply port
   V: Vacuum port
   EXH: Exhaust port

\*System depends on vacuum source (vacuum pump/vacuum ejector).

PE: Pilot pressure exhaust port

For details ⇒ Page 79

ZK2

ZQ

ZR

ZB

ZA

ZX

ZM

ZL

ZH

ZH

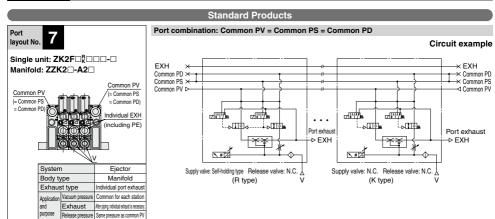
-X267

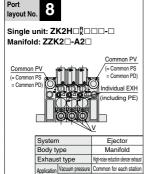
ZHP

ZU

VQD-V





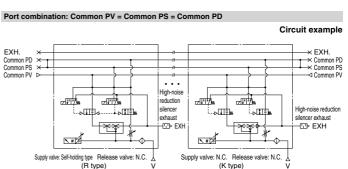


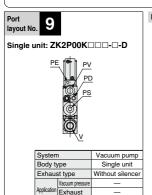
Exhaust

Released in operating environment Same pressure as common PV

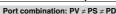
PD pressure has to be

supplied with PS pressure

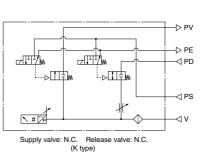




purpose



Option -D



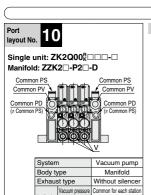
Circuit example



- PV: Air pressure supply port/Port for vacuum source (Vacuum pump) PS: Pilot pressure supply port
- PE: Pilot pressure exhaust port For details ⇒ Page 79

# Port Layout

\*System depends on vacuum source (vacuum pump/vacuum ejector).



Exhaust

nurnose

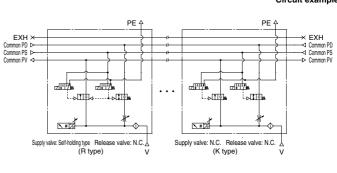
Common PD pressure has to

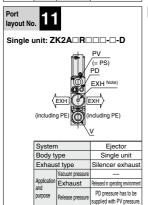
he supplied with common PS

# Port combination: Common PV ≠ Common PS ≠ Common PD

Option -D

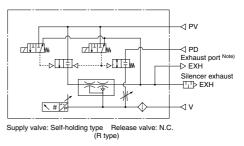
# Circuit example



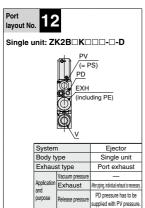


### Port combination: PV = PS ≠ PD

# Circuit example

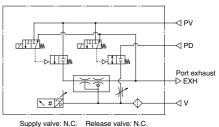


Note) Nozzle size: 12, 15



# Port combination: PV = PS ≠ PD

Circuit example



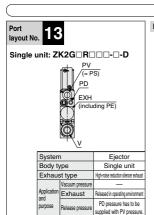
(K type)



- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
   PS: Pilot pressure supply port
- PD: Individual release pressure supply port
   V: Vacuum port
   EXH: Exhaust port PE: Pilot pressure exhaust port For details ⇒ Page 79

\*System depends on vacuum source (vacuum pump/vacuum ejector).

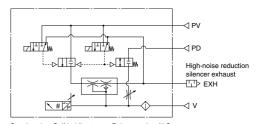




# Option -D

### Port combination: PV = PS ≠ PD

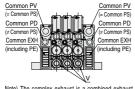
# Circuit example



Supply valve: Self-holding type Release valve: N.C (R type)

# layout No.

# Single unit: ZK2C□R□□□-□-P Manifold: ZZK2□-A1□-D Common PV



Note) The complex exhaust is a combined exhaust method of the common exhaust from the end plate and the direct exhaust from each station.

System	1	Ejector
Body ty	/ре	Manifold
Exhaus	st type	Complex exhaust Note)
	Vacuum pressure	Common for each station
Application	Exhaust	Released in operating environment
allu		Common PD pressure has to
		be supplied with common PV.

# Port combination: Common PV = Common PS ≠ Common PD

# Circuit example

ZK2

ZQ

ZR

ZB

ZA

ZX

ZM

ZL

ZH

ZH

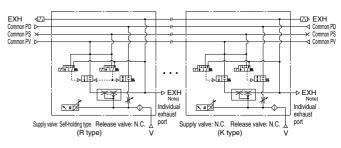
ZH

-X267

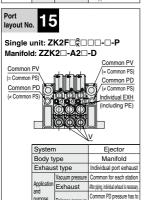
ZHP

ZU

VQD-V

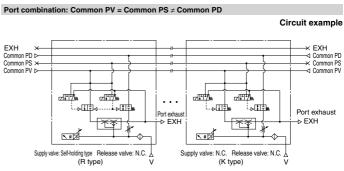


Note) For complex exhaust type, individual exhaust port is provided to each station.



be supplied with common PV

purpose



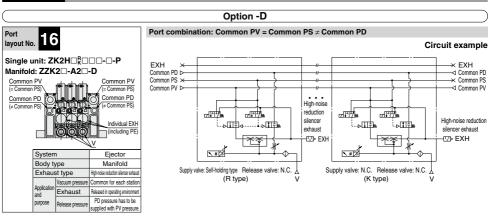
Refer to page 79 for the purpose of port and the operating pressure range.

**ØSMC** 

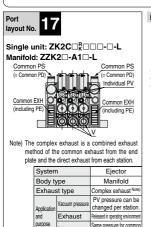
- PV: Air pressure supply port/Port for vacuum source (Vacuum pump) PS: Pilot pressure supply port
- PD: Individual release pressure supply port
   V: Vacuum port
   EXH: Exhaust port
   For details ⇒ Page 79

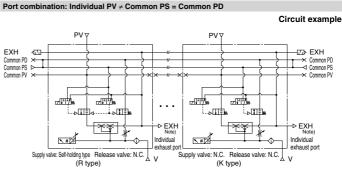
# Port Layout

\*System depends on vacuum source (vacuum pump/vacuum ejector).

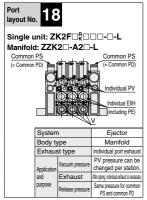


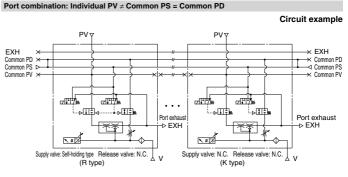
Option -L





Note) For complex exhaust type, individual exhaust port is provided to each station





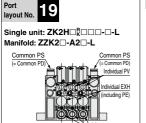


- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
   PS: Pilot pressure supply port
   PS: Individual soleces pressure supply port
   PS: Individual soleces pressure supply port
- PD: Individual release pressure supply port
   V: Vacuum port
   EXH: Exhaust port
   PE: Pilot pressure exhaust port
   Refer to the table below for details.

# Port Layout

\*System depends on vacuum source (vacuum pump/vacuum ejector).

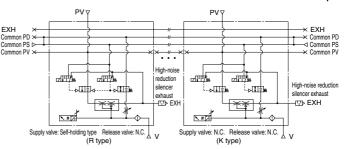




	System		Ejector
	Body type		Manifold
	Exhaust type		High-noise reduction silencer exhaust
	Application and purpose	Vacuum pressure	PV pressure can be changed per station.
		Exhaust	Released in operating environment
		Release pressure	Same pressure for common PS and common PD
_			

# Port combination: Individual PV ≠ Common PS = Common PD

Circuit example



ZL

ZK2

ZQ

ZB

ZA

ZX

ZM

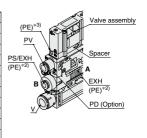
ZH ZH

-X267 **ZHP** 

ZU VQD-V

**Application and Operating Pressure Range of Each Port** 

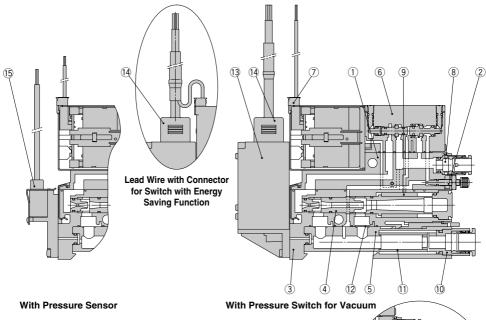
Port	Description	Vacuum Ejector System	Vacuum Pump System
	Air pressure supply port	Compressed air supply for operating ejector	_
PV	(Operating pressure range)	0.3 to 0.6 MPa*1)	_
"	Vacuum pressure supply port	_	Vacuum source (Vacuum pump)
	(Operating pressure range)	_	0 to -100 kPa
PS	Pilot pressure supply port	_	Compressed air supply for pilot valve
5	(Operating pressure range)	_	0.3 to 0.6 MPa
PD	Individual release pressure supply port	Release pressure Compressed	air supply for individual setting (Option)
70	(Operating pressure range)	0 to 0.6 MPa (PD ≤ PV)	0 to 0.6 MPa (PD ≤ PS)
V	Vacuum port	For connecting adsorp	tion equipment including pad
EXH	Exhaust port	Exhaust when ejector operates*2)	_
PE	Pilot pressure exhaust port	Exhaust whe	n valve operates*3)

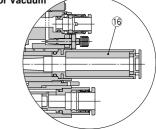


- \*1) For models without valve, pressure can be 0.3 MPa or less.
- \*2) For ejectors with silencer, air exhausts from A (slit on both sides). For port exhaust type, air exhausts from B.
- \*3) Pilot pressure for ejectors is exhausted from the ejector and the common exhaust. Pump system exhausts air from PE port on the spacer. (Female thread type (M3) is available by option (-C) for PE port of the pump system.)

# **ZK2** Series

# Construction





# **Component Parts**

No.	Description	Material	Note
1	Valve body assembly	Resin	HNBR, NBR and steel are also used.
2	Needle assembly	Brass	Electroless nickel plated brass, resin, steel and NBR are used.
3	Ejector body assembly	Resin	HNBR, NBR and steel are also used.
4	Ejector assembly	Resin	NBR is also used.
5	Filter case assembly	Resin	Case body: Polycarbonate (Refer to Specific Product Precautions on page 95.)

With High-noise Reduction Silencer

# Replacement Parts

	noplacement i are			
No.	Description	Note		
6	Valve assembly			
7	Connector assembly	Connector for solenoid valve 3 wire (For double), 2 wire (For single)		
8	One-touch fitting assembly	Standard supply (PV) port: ø6, ø1/4"		
9	Sound absorbing material	10 pcs. per set		
10	Vacuum port adapter assembly	With One-touch fitting and filter element (Case material: Polycarbonate)		
11	Filter element	Nominal filtration rating: 30 μm, 10 pcs. per set		
12	Check valve	For replacement or addition for manifold exhaust interference prevention (10 pcs. per set)		
13	Vacuum pressure switch assembly	With 2 screws and 1 gasket		
14	Lead wire with connector			
15	Pressure sensor assembly	With 2 screws and 1 gasket		
16	High-noise reduction silencer case assembly	With sound absorbing material (Part number: ZK2-SE4-6-A)		

ZK2

ZQ

ZB

ZA

ZX

ZM

ZL

ZH ZH ZH

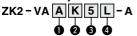
-X267 ZHP

ZU

VOD-V

# Replacement Parts/How to Order

6 Valve assembly



Applicable system

Α	For ejector system	
Р	For vacuum pump system	Г
		Г

W Y	Valve type
K	Supply valve N.C., Release valve N.C.
R	Supply valve, self-holding type (Linked to release valve)
J	Supply valve only (Single)

Rated voltage 24 VDC 6 12 VDC

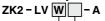
A Lead wire entry direction

Lead wife chary direction		
C For plug-in (Manifold common wiring)		
L L-type plug connector with lead wire (Individual w		
LO	L-type plug connector, without connector	

Select the ZK2-VAAK LO-A for a switch with energy saving function.

This assembly does not include special cable assembly for a switch with energy saving function.

⑦ Connector assembly



		Applicable valve type
	w	Valve type K/R
(With supply valve and i	(With supply valve and release valve)	
	s	Valve type J
	5	(Supply valve only)

<ul><li>Lead wire length</li></ul>		
Nil	300 mm	
6	600 mm	
10	1000 mm	
20	2000 mm	
30	3000 mm	

For single

For double





8 One-touch fitting assembly

(Purchasing order is available in units of 10 pieces.)

# Port size

04	ø4 One-touch fitting (Straight)	Metric
06	ø6 One-touch fitting (Straight)	size
03	ø5/32" One-touch fitting (Straight)	Inch
07	ø1/4" One-touch fitting (Straight)	size

Sound absorbing material (10 pcs. per set)

Sound absorbing material holes diameter

10 Vacuum port adapter assembly

# One-touch fitting size

6	ø6 One-touch fitting	Metric
8	ø8 One-touch fitting	size
7	ø1/4" One-touch fitting	Inch
9	ø5/16" One-touch fitting	size

1) Filter element (10 pcs. per set)

Nominal filtration rating

(12) Check valve Note) (10 pcs. per set)

# ZK2 - CV - A

Note) When mounting a check valve additionally, the workpiece may not be removed unless vacuum release pressure is applied.

# 13 Pressure switch for vacuum assembly



Rated pressure range and function

	0 to -101 kPa	Pressure switch for vacuum	Onen collector 2 autauta		
F	-100 to 100 kPa	Pressure switch for vacuum	Open collector 2 outputs		
v	-100 to 100 kPa	Pressure switch with energy saving function	Open collector 1 output		

, ,	Julpul specifications
A	NPN
В	PNP

Unit specifications

Nil	Unit selection function Note 1)
M	SI unit only Note 2)
Note 1) I	Init selection function is not available in

Japan due to measurement law.

Note 2) Fixed unit: kPa

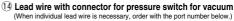
# 4 Lead wire with connector

Mounted to the manifold

Nil	None			
G	With	When <b>1</b> is E or F···For pressure switch for vacuum, Lead wire with connector (Length 2 m)		
ď		When 1 is V For switch with energy saving function, Lead wire with connector (Length 2 m)		

		Lead wire wi	Lead wire with connector (Length 2 m)						
<b>6</b> Мо	untii	ng <sup>Note)</sup>							
Nil	Мо	unted to the single unit							

The screw length mounted to the ejector is different Note) When ordering an ejector without valve, select Nil for mounting.

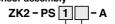


· Lead wire with connector for pressure switch for vacuum

ZS - 39 - 5G

• Lead wire with connector for switch with energy saving function

15 Pressure sensor assembly



# Rated pressure range and specifications

1	0 to -101 kPa, Output: 1 to 5 V, Accuracy: ±2% F.S. or less
3	-100 to 100 kPa, Output: 1 to 5 V, Accuracy: ±2% F.S. or less

	Mounting <sup>Note)</sup>
Nil	Mounted to the single unit
L	Mounted to the manifold

The screw length mounted to the ejector is different. Note) When ordering an ejector without valve, select Nil for mounting.

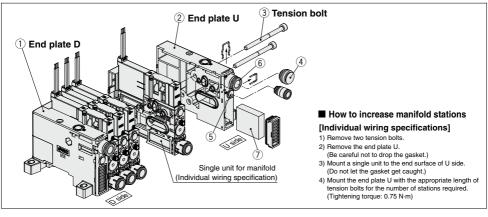
16 High-noise reduction silencer case assembly

Exhaust port size

4	ø4	For nozzle size 07, 10
6	ø6	For nozzle size 12, 15

# **Vacuum Unit ZK2** Series

# **Exploded View of Manifold**



Component Parts

No.	o. Description Material		Note					
1	End plate D assembly	Resin	HNBR, NBR and steel are also used.					
2	End plate U assembly	Resin	Electroless nickel plated brass, resin, steel and NBR are used.					

# Replacement Parts

пср	replacement i arts						
No.	Description	Note					
3	Tension bolt assembly	2 pcs. per set					
4	Port plug assembly	Plug for changing PV port to single side supply type (Common for mm and inch type)					
5	Port plug assembly	Plug for changing PS or PD port to single side supply type (Common for mm and inch type)					
6	One-touch fitting assembly	Metric size: ø8, Inch size: ø5/16"					
7	Sound absorbing material	2 pcs. per set - Material: Non-woven cloth (Silencer cover is not included.)					
8	DIN rail	Refer to Dimensions (from page 88 and after) for the recommended length for each number of manifolds stations.					
9	Connector housing assembly	Available connector is even number only. (If you need a connector for odd number, specify the connector of the number you need + 1 station.)					

Note) When ordering a manifold "ZZK2□-□□□-□-A" on page 64, ① to ③ are delivered as a set.

# Replacement Parts/How to Order

3 Tension bolt assembly (2 pcs. per set)

Applicable stations							
01	For 1 station manifold						
:							
10	For 10 stations manifold						

4 Port plug assembly (Purchasing order is available in units of 1 piece.) (5) Port plug assembly (Purchasing order is available in units of 1 piece.)

VVQZ2000 - CP

ZK2 - MP1C6 - A

6 One-touch fitting assembly (Purchasing order is available in units of 10 pieces.)

VVQ1000 - 51A - C8

Port size

ø8 One-touch fitting ø5/16" One-touch fitting

Sound absorbing material (2 pcs. per set)

ZK2 - SE2 - 1 - A

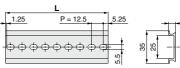
# (8) DIN rail

# AXT100 - DR - 5

Length symbols

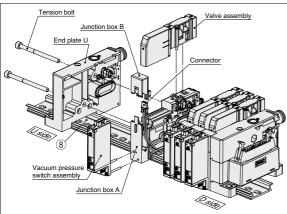


 $[L = 12.5 \text{ X} \blacksquare + 10.5]$ ■: Length symbols 1 to 40



L Dimension $L = 12.5 \times n + 1$								+ 10.5	
1	2	3	4	5	6	7	8	9	10
23	35.5	48	60.5	73	85.5	98	110.5	123	135.5
11	12	13	14	15	16	17	18	19	20
148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
21	22	23	24	25	26	27	28	29	30
273	285.5	298	310.5	323	335.5	348	360.5	373	385.5
31	32	33	34	35	36	37	38	39	40
398	410.5	423	435.5	448	460.5	473	485.5	498	510.5
	1 23 11 148 21 273 31	1 2 23 35.5 11 12 148 160.5 21 22 273 285.5 31 32	1         2         3           23         35.5         48           11         12         13           148         160.5         173           21         22         23           273         285.5         298           31         32         33	1         2         3         4           23         35.5         48         60.5           11         12         13         14           148         160.5         173         185.5           21         22         23         24           273         285.5         298         310.5           31         32         33         34	1         2         3         4         5           23         35.5         48         60.5         73           111         12         13         14         15           148         160.5         173         185.5         198           21         22         23         24         25           273         285.5         298         310.5         323           31         32         33         34         35	1         2         3         4         5         6           23         35.5         48         60.5         73         85.5           111         12         13         14         15         16           148         160.5         173         185.5         198         210.5           21         22         23         24         25         26           273         285.5         298         310.5         323         335.5           31         32         33         34         35         36	1         2         3         4         5         6         7           23         35.5         48         60.5         73         85.5         98           11         12         13         14         15         16         17           148         160.5         173         185.5         198         210.5         223           21         22         23         24         25         26         27           273         285.5         298         310.5         323         335.5         348           31         32         33         34         35         36         37	1         2         3         4         5         6         7         8           23         35.5         48         60.5         73         85.5         98         110.5           111         12         13         14         15         16         17         18           148         160.5         173         185.5         198         210.5         223         235.5           21         22         23         24         25         26         27         28           273         285.5         298         310.5         323         335.5         348         360.5           31         32         33         34         35         36         37         38	1         2         3         4         5         6         7         8         9           23         35.5         48         60.5         73         85.5         98         110.5         123           111         12         13         14         15         16         17         18         19           148         160.5         173         185.5         198         210.5         223         235.5         248           21         22         23         24         25         26         27         28         29           273         285.5         298         310.5         323         335.5         348         360.5         37           31         32         33         34         35         36         37         38         39

# Exploded View of Manifold **ZK2** Series



# ■ How to increase manifold stations [To increase the number of stations from odd number (1, 3, 5,

7, 9) in common wiring type to even number (2, 4, 6, 8, 10)]
(Common wiring of odd number station has a vacant connector for one station. Easy to add a station.)

- 1) Remove the tension bolt.
- 2) Remove the end plate U.
- 3) Remove the valve assembly of a single unit for extra station(s) for manifold.

ZK2

ZQ

ZB

ZA

ZX

ZL

ZH

ZH

-X267

ZHP

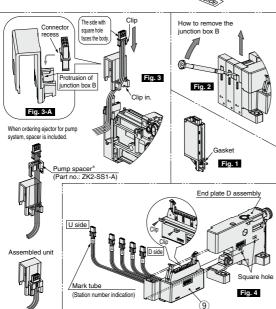
ZU

VOD-V

- 4) Remove the switch assembly if it is present. (Be careful not to drop the O-ring. Refer to Fig.1)
- Remove the junction box B (top) using a precision screwdriver. (Refer to Fig.2)
- 6) Mount the extra connector to the junction box B. (Refer to Fig.3) (Engage the recess of the connector and the protrusion of the junction box B. (Refer to Fig.3-A)
- 7) Mount a single unit for extra station(s) for manifold to the end surface of U side. (Do not let the gasket or lead wire get caught.)
- 8) Mount the end plate U with the appropriate length of tension bolts for the number of stations required. (Tightening torque: 0.75 N·m.)
- 9) Mount the junction box B to the junction box A.
- 10) Assemble the valve assembly. (Tightening torque: 0.15 N·m)
- 11) For products with a switch, mount the switch assembly. (Be careful not to drop the O-ring. Tightening torque: 0.08 to 0.10 N·m)

# [To increase the number of stations from even number to odd number, or increase two stations or more]

- Remove the valve assembly for all stations. (Single unit for extra station is also removed.)
- Remove the switch assembly if it is present. (Be careful not to drop the O-ring. Refer to Fig.1)
- Remove the junction box B (top) for all stations using a precision screwdriver. (Refer to Fig.2) (Remove the junction box B from D side.)
- Remove all connectors mounted to the junction box B. (Be careful not to break the connector clip.)
- 5) Remove the tension bolt.
- 6) Remove the end plate D assembly
- Remove the connector housing assembly from the end plate D assembly. (Refer to Fig.4)
- 8) Mount the connector housing assembly for extra station(s) to the end plate D assembly. (Refer to Fig. 1) (Insert two clips of the housing mounting surface to the square holes of the end plate, and slide the connector housing assembly.)
- Remove the end plate U. (Be careful not to drop the gasket.)
   Mount a single unit for extra station(s) for manifold to the end surface of U side. Do not let the gasket get caught.
- Mount the end plate U and D with the appropriate length of tension bolts for the number of stations required. (Tightening torque: 0.75 N·m.)
- 12) Mount the connector for all stations to the junction box B. (Refer to Fig.3) (Engage the recess of the connector and the protrusion of the junction box B. (Refer to Fig.3-A)
- 13) Mount the junction box A to the junction box B. Push the wires down the side and mount the junction box A to the junction box B following a decreasing mark tube numbers from U side. (Do not let the lead wire get caught.)
- 14) Assemble the valve assembly. (Tightening torque: 0.15 N·m) 15) For products with a switch, mount the switch assembly.
- (Be careful not to drop the O-ring. Tightening torque: 0.08 to 0.10 N·m)
- \*When adding a pump system, the pump spacer for extra station is required separately.



# 9 Connector housing assembly

ZK2-CH204-A

# Applicable stations

	-74	pilcabic stations				
02 For 2 stations manifo						
	04	For 4 stations manifold				
	For 6 stations manifold					
	08	For 8 stations manifold				
	10	For 10 stations manifold				

### Connector type

1	D sub-connector (25 pins						
2	Flat ribbon cable (26 pins)						

■ Plug (For One-touch fitting) (Purchasing order is available in units of 10 pieces.)

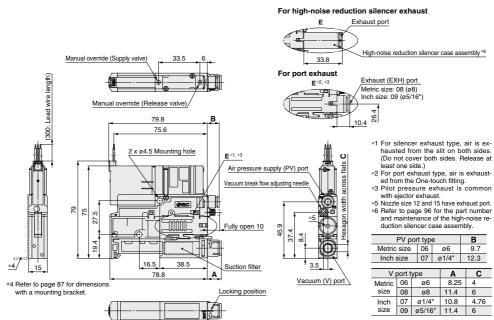


Symbol	Applicable size Ø <b>d</b>	A	L	øD	Weight [g]	Note
06	ø6	18	35	8	1	White
08	ø8	20.5	39	10	2	White
07	ø1/4"	18	35	8.5	1	Orange
09	ø5/16"	20.5	39	10	2	Orange

# **Dimensions: Single Unit**

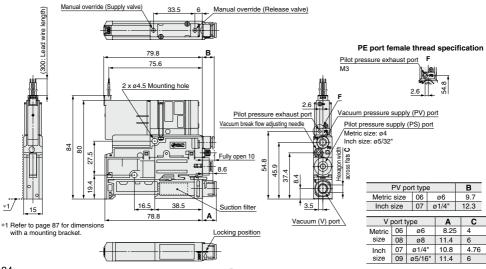
# ZK2Å□ K□NL2-□

Ejector system, Single unit, With supply valve/release valve, Without pressure sensor/switch



# ZK2P00<sup>K</sup>□NL2-□

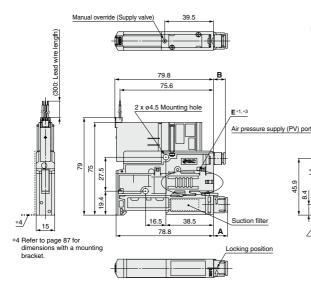
Vacuum pump system, Single unit, With supply valve/release valve, Without pressure sensor/switch



# **Dimensions: Single Unit**

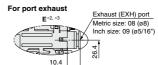
# ZK2∯□J□NL2-□

Ejector system, Single unit, With supply valve, Without pressure sensor/switch



### For high-noise reduction silencer exhaust





lexagon width across flats

Vacuum (V) port

\*1 For silencer exhaust type, air is exhausted from the slit on both sides. (Do not cover both sides, Release at least one side.)

ZK2 ZQ

ZR

ZB

ZA

ZX

ZH

ZH -X267

ZHP

ZU

VQD-V

- \*2 For port exhaust type, air is exhausted from the One-touch fitting.
- \*3 Pilot pressure exhaust is common with ejector exhaust \*5 Nozzle size 12 and 15 have exhaust port.
- \*6 Refer to page 96 for the part number and maintenance of the high-noise reduction silencer case assembly.

		В	l				
Metric	size	06		ø6		9.7	
Inch:	07	ç	ø1/4"		12.3		
							_
۷۱	oort ty	ре		Α		С	
V <sub>I</sub> Metric	oort ty	pe ø6		<b>A</b> 8.25	;	<b>C</b>	_

		В						
Metric	Metric size 06 ø6					9.7		
Inch	Inch size			ø1/4"		12.3		
V port type				Α		С		
Metric	06	ø6		8.25		4		

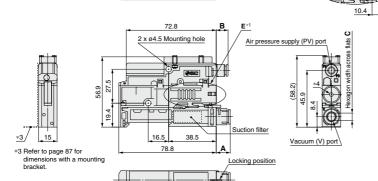
۷۱	oort t	ype	Α	С				
Metric	06	ø6	8.25	4				
size	08	ø8	11.4	6				
Inch	07	ø1/4"	10.8	4.76				
size	09	ø5/16"	11.4	6				

# ZK2∯□N0NN-□

Ejector system, Single unit, Without valve, Without pressure sensor/switch

### High-noise reduction silencer case assembly \*5 33.8 For port exhaust Exhaust (EXH) port E\*2 Metric size: 08 (ø8) Inch size: 09 (ø5/16")

For high-noise reduction silencer exhaust Exhaust port



**SWC** 

- \*1 For silencer exhaust type, air is exhausted from the slit on both sides. (Do not cover both sides. Release at least one side.)
- For port exhaust type, air is exhaust-ed from the One-touch fitting.
- \*4 Nozzle size 12 and 15 have exhaust port. \*5 Refer to page 96 for the part number and maintenance of the high-noise reduction silencer case assembly.

PV port type

Metric	06		Ø6		9.7			
Inch	07	ø1/4"		Г	12.3			
V port type				Α		С		
Metric	06	ø6		8.25	;	4		
size	08	ø8		11.4		6		
Inch	07	ø1/4'		10.8		4.76		

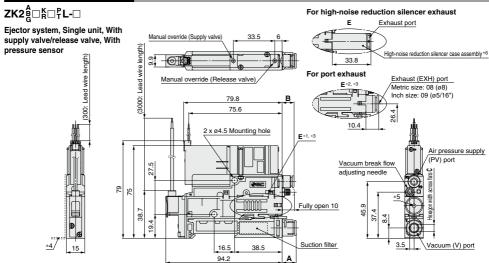
85 ®

09 ø5/16" 11.4

size

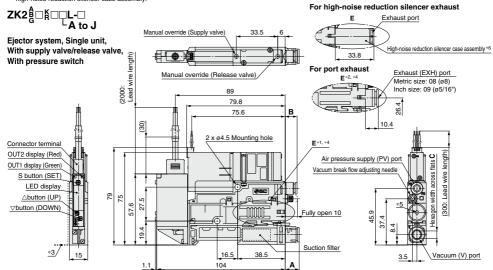
# ZK2 Series

# **Dimensions: Single Unit**



- \*1 For silencer exhaust type, air is exhausted from the slit on both sides. (Do not cover both sides, Release at least one side.)
- \*2 For port exhaust type, air is exhausted from the One-touch fitting.
- \*3 Pilot pressure exhaust is common with ejector exhaust. \*4 Refer to page 87 for dimensions with a mounting bracket
- \*5 Nozzle size 12 and 15 have exhaust port.
- \*6 Refer to page 96 for the part number and maintenance of the high-noise reduction silencer case assembly.

V port type		Α	С	C PV port type					
Metric	06	ø6	8.25	4		Metric size	06	ø6	9.7
size	08	ø8	11.4	6		Inch size	07	ø1/4"	12.3
Inch	07	ø1/4"	10.8	4.76					
size	na	α5/16"	11 4	6					



**SMC** 

- \*1 For silencer exhaust type, air is exhausted from the slit on both sides (Do not cover both sides. Release at least one side.)
- \*2 For port exhaust type, air is exhausted from the One-touch fitting.
- \*3 Refer to page 87 for dimensions with a mounting bracket \*4 Pilot pressure exhaust is common with ejector exhaust.
- \*5 Nozzle size 12 and 15 have exhaust port.
- \*6 Refer to page 96 for the part number and maintenance of the high-noise reduction silencer case assembly.

V	oort t	Α	С	
Metric	06	ø6	8.25	4
size	08	ø8	11.4	6
Inch	07	ø1/4"	10.8	4.76
size	09	ø5/16"	11.4	6

PV port type					
06	ø6	9.7			
07	ø1/4"	12.3			
	06	06 ø6			

ZK2

ZQ ZR ZB

ZA

ZX

ZM

ZL

ZH

ZH

ZH -X267

ZHP

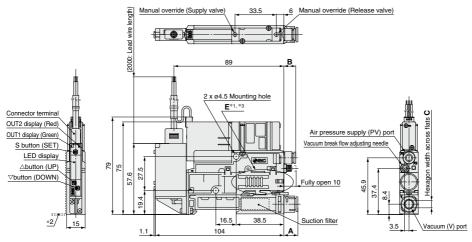
ZU

VQD-V

# **Dimensions: Single Unit**

ZK2gG K□□W-□ K to S

Ejector system, Single unit, With supply valve/ release valve, Pressure switch with energy saving function

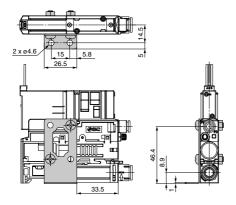


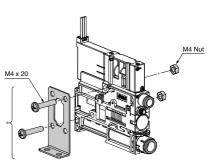
- \*1 For silencer exhaust type, air is exhausted from the slit on both sides. (Do not cover both sides. Release at least one side.)
- \*2 Refer to the following for dimensions with a mounting bracket.
- \*3 Pilot pressure exhaust is common with ejector exhaust.

V	port t	Α	С	
Metric	06	ø6	8.25	4
size	08	ø8	11.4	6
Inch	07	ø1/4"	10.8	4.76
size	09	ø5/16"	11.4	6

PV poi	В		
Metric size	06	ø6	9.7
Inch size	07	ø1/4"	12.3
	_		

# With bracket



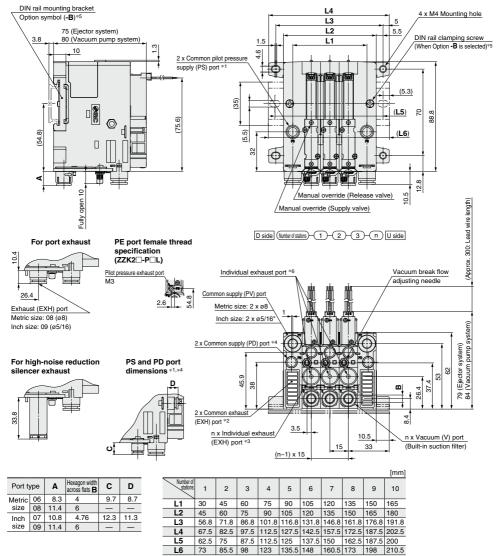


\*Mounting bracket for single unit (Option), [Nuts and bolts are included.] Part number: ZK2-BK1-A

# **Dimensions: Manifold Individual Wiring**

# ZZK2□-P□L

Ejector system, Vacuum pump system, Individual wiring manifold, With supply valve/release valve, Without pressure sensor/switch



<sup>\*1</sup> Common pilot pressure supply port is available for vacuum pump system or option L (Manifold individual supply specification). (mm: ø6 inch: ø1/4")

<sup>\*2</sup> Pump system with individual exhaust port type does not have exhaust port.

<sup>\*3</sup> When individual exhaust port type is selected (Body type: F)

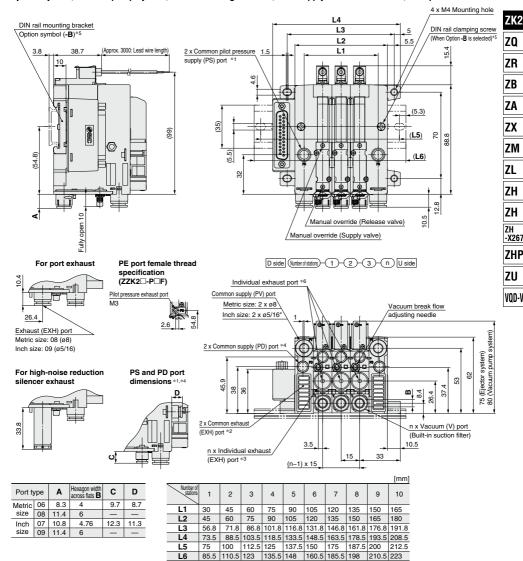
<sup>\*4</sup> Only when common PD port type option (Symbol: -D) is selected (mm: ø6 inch: ø1/4") \*5 To fix the manifold to DIN rail, select an option for the manifold model number.

<sup>\*6</sup> For complex exhaust type, air is also exhausted from the individual exhaust port of each station in addition to the common exhaust. (Ejector system)

# **Dimensions: Manifold D-sub Connector**

# ZZK2□-₽□F

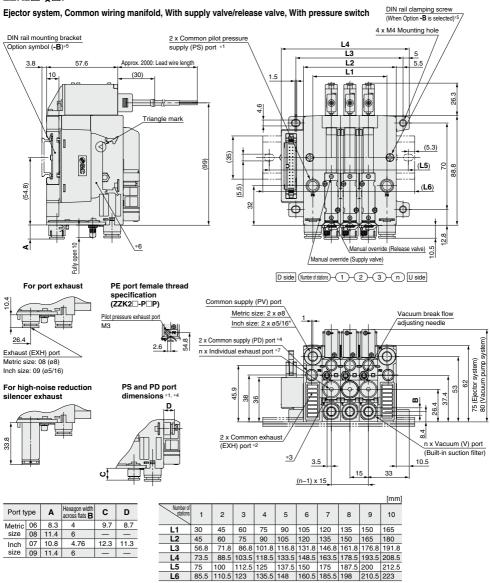
Ejector system, Vacuum pump system, Common wiring manifold, With supply valve/release valve, With pressure sensor



- \*1 Common pilot pressure supply port is available for vacuum pump system or option L (Manifold individual supply specification). (mm: ø6 inch: ø1/4")
- \*2 Pump system with individual exhaust port type does not have exhaust port. \*3 When individual exhaust port type is selected (Body type: F)
- \*4 Only when common PD port type option (Symbol: -D) is selected (mm: ø6 inch: ø1/4")
- \*5 To fix the manifold to DIN rail, select an option for the manifold model number.
- \*6 For complex exhaust type, air is also exhausted from the individual exhaust port of each station in addition to the common exhaust. (Ejector system)

# **Dimensions: Manifold Flat Ribbon Cable**

# ZZK2□-盎□P



- \*1 Common pilot pressure supply port is available for vacuum pump system or option L (Manifold individual supply specification). (mm: ø6 inch: ø1/4")
- \*2 Pump system with individual exhaust port type does not have exhaust port.
- \*3 When individual exhaust port type is selected (Body type: F)
- \*4 Only when common PD port type option (Symbol: -D) is selected (mm: ø6 inch: ø1/4")
- \*5 To fix the manifold to DIN rail, select an option for the manifold model number. \*6 Applicable connector: Connector for flat ribbon cable (26P)(MIL-C-83503 compliant)
- \*7 For complex exhaust type, air is also exhausted from the individual exhaust port of each station in addition to the common exhaust. (Ejector system)

ZK2

**ZO** 

ZB

ZX

ZM

ZL

ZH

ZH

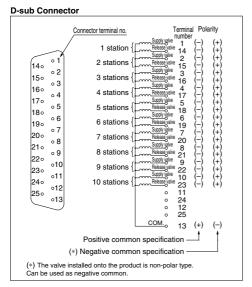
ZH

-X267

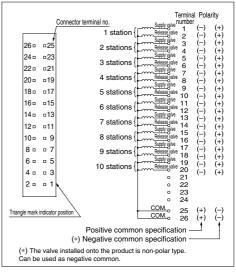
ZHP

VQD-V

# **Electrical Wiring Specifications**



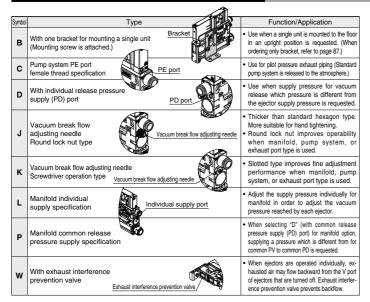
A D-sub connector (25P) conforming to MIL standards is used.



Flat Ribbon Cable Connector

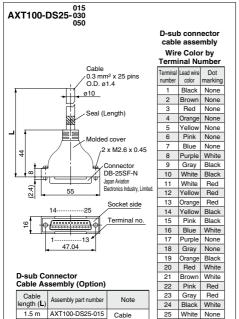
A flat ribbon cable connector (26P) conforming to MIL standards is used.

# **Optional Specifications/Functions/Applications**



# Cable Assembly

# **D-sub Connector**



\*For other commercial connectors, use a 25-pin type with female connector conforming to MIL-C-24308.

0.3 mm<sup>2</sup> x 25 cores

# \*Cannot be used for movable wiring

AXT100-DS25-030

AXT100-DS25-050

### **Flectrical Characteristics**

3 m

5 m

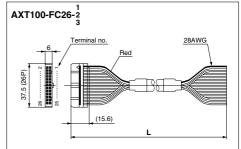
Item	Property	
Conductor resistance Ω/km, 20°C	65 or less	
Voltage limit V, 1 min, AC	1000	
Insulation resistance MΩ/km, 20°C	5 or more	

### Connector manufacturers' example

- Fujitsu Limited • Japan Aviation Electronics
- Industry, Limited.
- J.S.T. Mfg. Co., Ltd. HIBOSE ELECTRIC CO., LTD.

Note) The minimum bending inner radius of D-sub connector cable is 20 mm.

# Flat Ribbon Cable Connector



# Flat Ribbon Cable Connector Assembly (Option)

Cable	Assembly part number
length (L)	26P
1.5 m	AXT100-FC26-1
3 m	AXT100-FC26-2
5 m	AXT100-FC26-3

- \*For other commercial connectors, use a 26-pin type with strain relief conforming to MIL-C-83503. \*Cannot be used for movable wiring.

# Connector manufacturers' example

- HIROSE ELECTRIC CO., LTD.
  - · Japan Aviation Electronics Industry, Limited. • J.S.T. Mfg. Co., Ltd.
- 3M Japan Limited Fuiitsu Limited
  - Oki Electric Cable Co., Ltd.