

<http://www.koganei.co.jp>

iB Series

5-port manifold solenoid valve

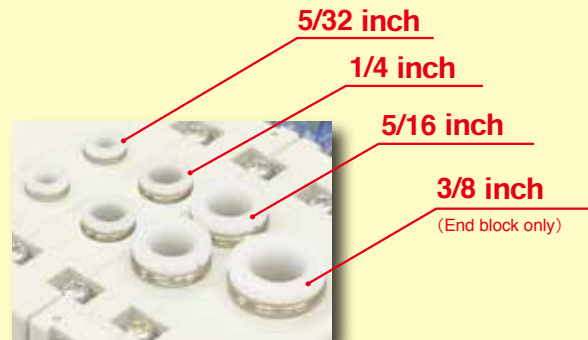
iB-ZERO

PAT.PEND.

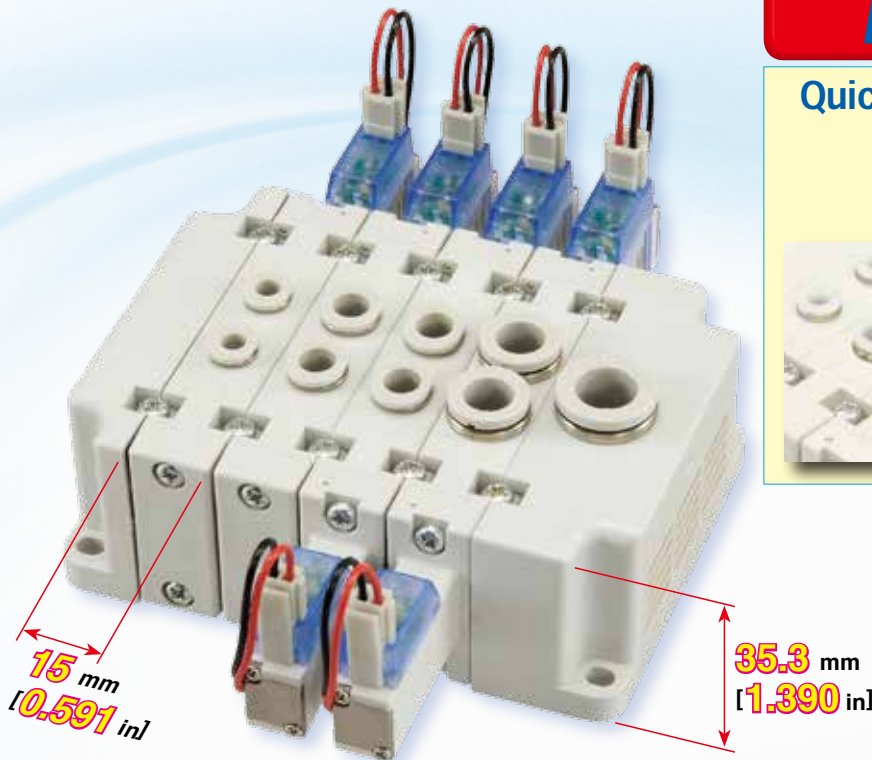
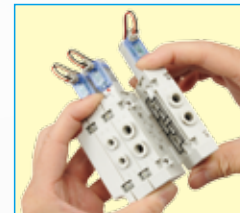
The first in the world!
Integrally molded, all-plastic body!

NEW OPTION!!

Quick fitting for Inch tube added.



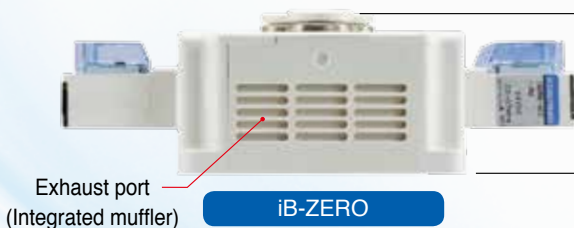
Easy assembly!



Thin and lightweight!

Nearly **40%** smaller

Nearly **57%** less mass than the previous 180 series manifold



iB-ZERO



Previous 180 series

* Valve width: 18 mm [0.709 in.]

Easy assembly

Its simple configuration makes assembling the manifold a breeze.

Instant assembly → quick delivery

Simple Selection

All are integrated fitting types (select from mm: $\phi 4$, $\phi 6$, $\phi 8$ / in: 5/32, 1/4, 5/16)

Perfect for cylinder controls from small diameter to about $\phi 80$ [3.150 in]

Specifications

Item		Model	IBZR8-4E1	IBZR8-4E2
Number of positions			2 positions	
Number of ports			5	
Valve function			Single solenoid	Double solenoid
Medium			Air	
Operation system			Internal pilot type	
Flow rate characteristics	Sonic conductance C	dm ³ /(s·bar)	mm J42: 0.8, J62: 1.6, J82: 2	
		in	J5/32: 0.8, J1/4: 1.6, J5/16: 2	
	Effective cross section area [Cv value] ^{Note 1}	mm ² [Cv]	mm J42: 4 [0.22], J62: 8 [0.44], J82: 10 [0.56]	
		in	J5/32: 4 [0.22], J1/4: 8 [0.44], J5/16: 10 [0.56]	
Connection port size		mm	Supply port φ10 [0.394], outlet port φ4 [0.157], φ6 [0.236], φ8 [0.315]	
		in	Supply port 3/8, outlet port 5/32, 1/4, 5/16	
Lubrication			Not required	
Operating pressure range		MPa [psi]	0.2 to 0.7 [29 to 102]	
Proof pressure		MPa [psi]	1.05 [152]	
Operating temperature range (atmospheric and medium)		°C [°F]	5 to 50 [41 to 122]	
Response time ^{Note 2} on/off time		ms	15/30 or less	30 or less
Maximum operating frequency		Hz	5	
Shock resistance		m/s ² [G]	294.2 [30]	
Mounting direction			Unrestricted	

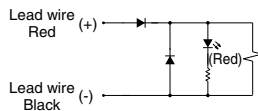
Notes 1: The effective cross section values are calculated values, and are not measured values.
2: The valve when air pressure is 0.5 MPa [73 psi].

Handling Instructions and Precautions

Internal circuit

•24 VDC

Solenoid with LED indicator and surge suppression

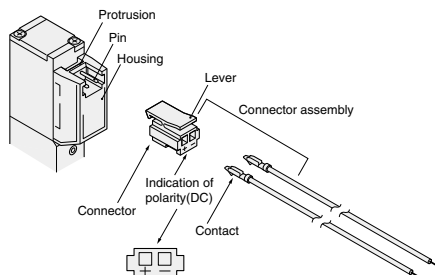


- Do not apply megger between the pins.
- Malfunctions, such as the solenoid valve not returning to normal, may occur if there is a leakage current within the circuit. Always use it at less than the allowable leakage current shown in the solenoid specifications. If circuit conditions, etc. cause the leakage current to exceed the maximum allowable leakage current, consult us.
- For the double solenoid configuration, avoid energizing both solenoids simultaneously.

Attaching and removing plug connector

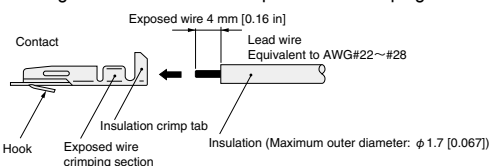
Use fingers to insert the connector into the pin, push it in until the lever claw latches onto the protruded section of the connector housing, and complete the connection.

To remove the connector, squeeze the lever along with the connector, lift the lever claw up from the protruded section of the connector housing, and pull it out.



Crimping of connecting lead wire and contact

To crimp lead wires into contacts, strip off 4 mm [0.16 in] of the insulation from the end of the lead wire, insert it into the contact, and crimp it. Be sure at this time to avoid catching the insulation on the exposed wire crimping section.



- Do not pull hard on the lead wire.
- Always use a dedicated tool for crimping of connecting lead wire and contact.
Contact: Model 702062-2M
Manufactured by Sumiko Tech, Inc.
Crimping tool: Model F1-702062
Manufactured by Sumiko Tech, Inc.

Electrical Specifications

Item		Rated voltage	24 VDC
Applicable voltage range		V	21.6 to 26.4 (24±10%)
Current (when rated voltage applied)		mA	23
Power consumption		W	0.55
Allowable circuit leakage current		mA	1.0
Type of insulation			B type
Insulation resistance ^{Note}		MΩ	100 or over
Color of LED indicator			Red
Surge protection (standard equipment)			Flywheel diode

Note: Value at 500 VDC Megger

Remark: Specification values are based on Koganei test standards.

Mass

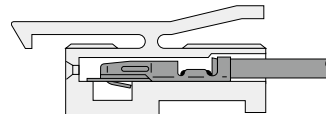
g [oz]

Model	Mass
IBZR8-4E1	mm J42: 59 [2.08], J62: 60 [2.12], J82: 63 [2.22]
	in J5/32: 59[2.08], J1/4: 60[2.12], J5/16: 63[2.22]
IBZR8-4E2	mm J42: 75 [2.65], J62: 75 [2.65], J82: 78 [2.75]
	in J5/32: 75[2.65], J1/4: 75[2.65], J5/16: 78 [2.75]
IBZR8Z-E (end block)	81 [2.86]
IBZR8Z-E3/8	81 [2.86]

Attaching and removing contact and connector

Insert the contact with lead wire into a plug connector □ hole until the contact hook latches on and is secured to the plug connector. Confirm that the lead wire cannot be easily pulled out.

To remove it, insert a tool with a fine tip (such as a small screwdriver) into the rectangular hole on the side of the plug connector to push up on the hook, and then pull out the lead wire.



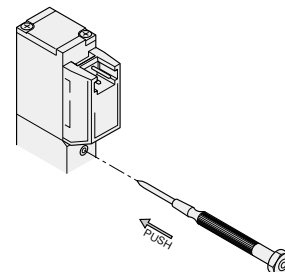
- Do not pull hard on the lead wire. It could result in defective contacts, breaking wires, etc.
- If the pin is bent, use a small screwdriver, etc. to gently straighten out the pin, and then complete the connection to the plug connector.

Manual override

To operate the manual override, press it all the way down.

For the single solenoid, the valve works the same as when in the energized state as long as the manual override is pushed down, and returns to the rest position upon release.

For the double solenoid, pressing the manual override on the 14 (SA) side switches the 14 (SA) to the energized state, and the unit remains in that state even after the manual override is released. To return it to the rest position, operate the manual override on the 12 (SB) side. This is the same for the solenoid 12 (SB).




- The iB-ZERO series uses pilot type solenoid valves, so if you do not supply air to the 1 (P) port, the main valve will not change, even if you operate the manual override.
- Do not attempt to operate the manual override with a pin or other object having an extremely fine tip. It could result in damage to the manual override.

Identification of quick fitting size

Tube size unit	Release ring color
mm size	Ivory
in size	Milk white

Order codes

● Single valve unit (The single valve unit cannot be used alone.)



Valve specifications

-4E1: 5-port, 2-position single solenoid
-4E2: 5-port, 2-position double solenoid

Single solenoid: 14 (SA), 4 (A), 2 (B), 5 (R1), 1 (P), 3 (R2)
Double solenoid: 14 (SA), 12 (SB), 4 (A), 2 (B), 5 (R1), 1 (P), 3 (R2)

Specifications for fittings of pipe ports

-J42: quick fitting for $\phi 4$ [0.157] tubes
-J62: quick fitting for $\phi 6$ [0.236] tubes
-J82: quick fitting for $\phi 8$ [0.315] tubes
-J5/32: quick fitting for 5/32 in. tubes
-J1/4: quick fitting for 1/4 in. tubes
-J5/16: quick fitting for 5/16 in. tubes


Wiring specification

L type plug connector Lead wire 300 mm [11.8 in] (-PL)
L type plug connector Lead wire 1000 mm [39 in] (-PL1)
L type plug connector No connector (-PLN)



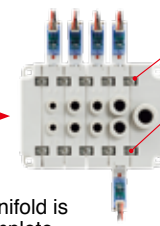
Model	Valve specifications	Specifications for fittings of pipe ports	Wiring specification	Voltage
IBZR8	-4E1 -4E2	-J42 -J62 -J82 -J5/32 -J1/4 -J5/16	-PL -PL1 -PLN	24 VDC ^{Note}

Remarks: The gasket is installed in the valve body. Two mounting screws (bracket attached) are provided with the valve body.
Note: For questions regarding support for 5-V, 6-V, and 12-V DC products, contact our sales office.


● End block (left-right set) The manifold can be easily made by assembling the end block and the valve.

IBZR8Z - 

E: quick fitting for $\phi 10$ [0.394] tube
E3/8: quick fitting for 3/8 in. tube

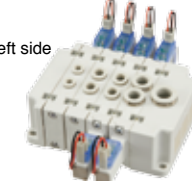

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→


End block Each type of valve Manifold is complete.

Mounting screw (bracket attached) 

See page 4 for details

● Manifold



Left side
Right side

Valve specifications

-4E1: 5-port, 2-position single solenoid
-4E2: 5-port, 2-position double solenoid

Specifications for fittings of pipe ports


-J42: quick fitting for $\phi 4$ [0.157] tubes
-J62: quick fitting for $\phi 6$ [0.236] tubes
-J82: quick fitting for $\phi 8$ [0.315] tubes
-J5/32: quick fitting for 5/32 in. tubes
-J1/4: quick fitting for 1/4 in. tubes
-J5/16: quick fitting for 5/16 in. tubes

Manifold format

N: Finished product has each valve connected (fixed with mounting screw (bracket attached))
NS: Semi-finished product before each valve is connected^{Note 1}
*Mounting screws (bracket attached) must be used to connect and fix each valve before use. (mounting screw (bracket attached) provided)

Mounting

Blank: Direct mounting
-DN: With DIN rail mounting bracket^{Note 1, Note 3}



Piping block

Blank: Quick fitting for $\phi 10$ mm tube
-J3/8: Quick fitting for 3/8 inch tube

Wiring specification

L type plug connector Lead wire 300 mm [11.8 in] (-PL)
L type plug connector Lead wire 1000 mm [39 in] (-PL1)
L type plug connector No connector (-PLN)
Pre-wired positive common terminal^{Note 5} Lead wire 300mm (-CPL)

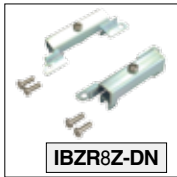
Model	Number of valves	Manifold format	Mounting	Piping block	Stations	Model	Valve specifications	Specifications for fittings of pipe ports	Wiring specification	Voltage
Manifold model						Model of mounted valve				
IBZR8M	1 ⋮ 20 (16) <small>Note 1</small>	N NS ^{Note 2}	Blank -DN <small>Note 1, Note 3</small>	Blank -J3/8 <small>Note 8</small>	stn. 1 ⋮ stn. <input type="checkbox"/> <small>Note 4</small>	IBZR8	-4E1 -4E2	-J42 ^{Note 8} -J62 ^{Note 8} -J82 ^{Note 8} -J5/32 ^{Note 8} -J1/4 ^{Note 8} -J5/16 ^{Note 8}	-PL -PL1 -PLN -CPL ^{Note 5}	24 VDC ^{Note 7}
						-PJ (if an intermediate piping block is mounted on the specified station) -PL3/8 ^{Note 8}				

Note 1: Note1: The maximum number of valves is 20 stations. When the DIN rail mounting bracket is selected, the maximum is 16 stations.
2: After doing connections, before supplying air to the manifold, be sure to check that the connections that were made between each valve and end block are secure.
3: Please separately prepare the DIN rail. When -NS is selected for the manifold format, the DIN rail mounting brackets will be attached parts.
4: Valve positions are counted from the left side of the manifold.
5: Common connector assemblies are available for common wiring connections. For details, see page 6.
6: When connecting common wires between double solenoid valves on the 12 (SB) side, connections are possible between double solenoid valves if 1 single solenoid valve is mounted between them, or even if 1 intermediate piping block is mounted between them. However, connections cannot be done if there are two or more, due to the relative length of the branch wires for common connections.
7: For questions regarding support for 5-V, 6-V, and 12-V DC products, contact our sales office.
8: (mm) fitting and (in.) fitting valves cannot be mixed in the same manifold.

Order codes

• Additional parts (available separately)

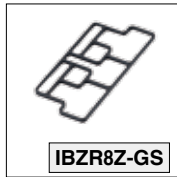
DIN rail mounting bracket



(4 mounting screws included)

NOTE When using DIN rail mounting brackets, the maximum number of valves is 16 stations.

Gasket



(Units: 1)

Set of brackets and mounting screws



(Units: 2 pcs)

DIN rail



(Unit: 1 pcs)

DIN - □

Length of DIN rail

125 : 125mm	325 : 325mm
150 : 150mm	350 : 350mm
175 : 175mm	375 : 375mm
200 : 200mm	400 : 400mm
225 : 225mm	425 : 425mm
250 : 250mm	450 : 450mm
275 : 275mm	475 : 475mm
300 : 300mm	500 : 500mm

End block (left-right set)



IBZR8Z-□

E : quick fitting for $\phi 10$ [0.394] tube
E3/8 : quick fitting for 3/8 in. tube

(With 1 gasket and 2 connecting brackets attached)

Intermediate piping block



IBZR8Z-□

PJ : quick fitting for $\phi 10$ [0.394] tube
PJ3/8 : quick fitting for 3/8 in. tube

(With 1 gasket and 2 connecting brackets attached)

Connector-related

EAZ - □

Connector specification

- P : Connector, lead wire length 300 mm [11.8 in]
- P1 : Connector, lead wire length 1000 mm [39 in]
- P3 : Connector, lead wire length 3000 mm [118 in]
- PN : Connector, without lead wire (contacts included)

Common connector assembly

EAZ - □

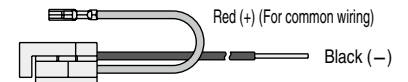
Connector specification

- PA : Positive common A type, connector, lead wire length 300 mm [11.8 in]
- PA1 : Positive common A type, connector, lead wire length 1000 mm [39 in]
- PA3 : Positive common A type, connector, lead wire length 3000 mm [118 in]
- PB : Positive common B type, connector, lead wire length 300 mm [11.8 in]
- PB1 : Positive common B type, connector, lead wire length 1000 mm [39 in]
- PB3 : Positive common B type, connector, lead wire length 3000 mm [118 in]
- PC : Positive common C type, connector, lead wire length 300 mm [11.8 in]
- PC1 : Positive common C type, connector, lead wire length 1000 mm [39 in]
- PC3 : Positive common C type, connector, lead wire length 3000 mm [118 in]
- CPN : Positive common, connector, without lead wire (short bar and contacts included)

A type: EAZ-PA□*



B type: EAZ-PB□*



C type: EAZ-PC□*

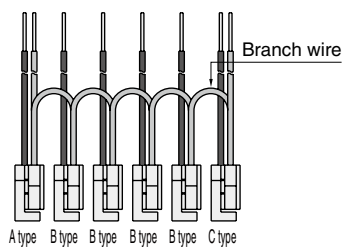


* Lead wire length **Blank**: 300 mm [11.8 in]
1: 1000 mm [39 in]
3: 3000 mm [118 in]

Application example



Connection example



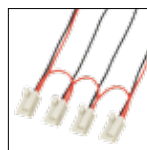
- NOTE**
- Due to the relative length of the branch wires for common wire connections, connections cannot be done if two or more intermediate piping blocks are mounted between valves.
 - When connecting common wires between double solenoid valves on the 12 (SB) side, connections are possible between double solenoid valves if 1 single solenoid valve is mounted between them, or even if 1 intermediate piping block is mounted between them. However, connections cannot be done if there are two or more, due to the relative length of the branch wires for common connections.

Lead wire assembly (order made) with completed common connections

Using lead wire assemblies with completed common connections reduces wiring.

Order codes

EAZ-1W - □ P □

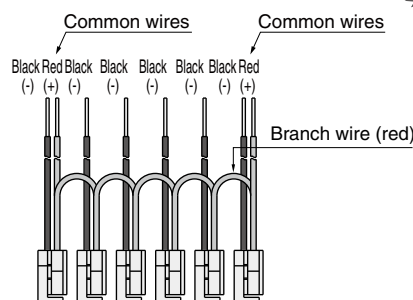


Lead wire length
Blank — 300 mm [11.8 in]
1 — 1000 mm [39 in]
3 — 3000 mm [118 in]

Number of units wired together
2: 2 connections
}
20: 20 connections

Lead wire assembly with completed common connections

For the EAZ-1W-6P□



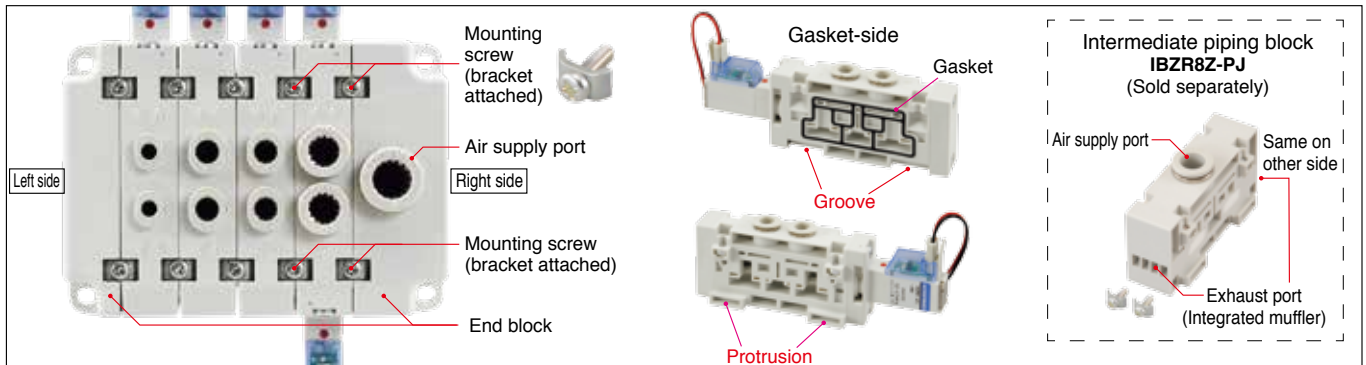
- NOTE**
- Due to the relative length of the branch wires for common wire connections, connections cannot be done if two or more intermediate piping blocks are mounted between valves.
 - When connecting common wires between double solenoid valves on the 12 (SB) side, connections are possible between double solenoid valves if 1 single solenoid valve is mounted between them, or even if 1 intermediate piping block is mounted between them. However, connections cannot be done if there are two or more, due to the relative length of the branch wires for common connections.

How to assemble and replace valves

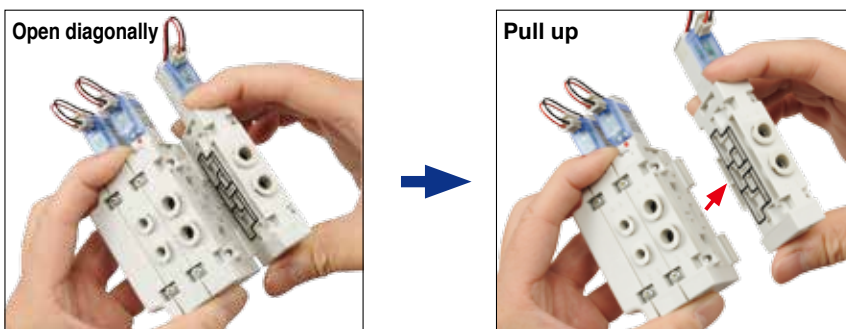
Assemble or replace the valves while the manifold body is not fixed.

Refer to ③ and ④ when the customer is the one purchasing the end block and valves and assembling the manifold.

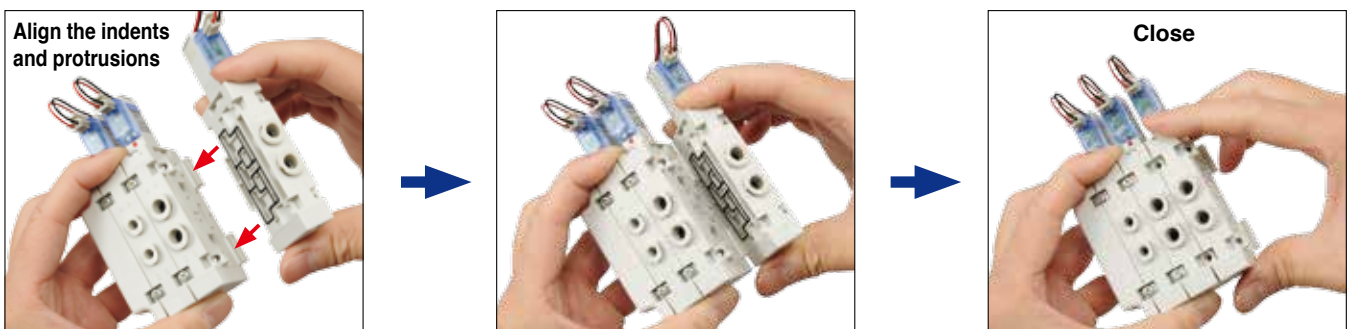
- ① Remove the mounting screws (bracket attached) from the four places (when adding valves, the two places on the top and bottom of where you are adding the valve) on the top and bottom of the valve to replace.



- ② The valve and end block can be removed by opening them diagonally and pulling up.



- ③ Assemble while diagonally aligning the positions of the indents and protrusions of the new valve.



- ④ After attaching, fix it with a mounting screws. (Recommended tightening torque: 0.49 N·m [0.36 ft·lbf])

[Caution]

- Always turn off the power and the air supplies before starting work. Also, be sure to proceed after checking that all air from inside the manifold is vented.
- The maximum number of units that can be connected in a series is 20, including intermediate piping blocks.
- Be careful that the gasket is not pinched or does not fall out.
- Before supplying air to the manifold, be sure to check that the connections that were made between each valve and end block are secure.
- We recommend adding intermediate piping blocks [IBZR8Z-PJ (-PJ3/8)] if needed, when there is a large number of valves or a large number of valves simultaneously supplying air to the secondary side. Also, be careful of actuator malfunctions caused by the exhaust pressure. Furthermore, both intermediate piping blocks [IBZR8Z-PJ (-PJ3/8)] and valves can be added using the same procedure.
- The exhaust port is an integrated muffler type. Before use, confirm that there is no exhaust noise or increase in pressure in the control panel when it is sealed.
- Air leakage from valves is not zero. For questions regarding the allowable amount of leakage, contact our sales office.

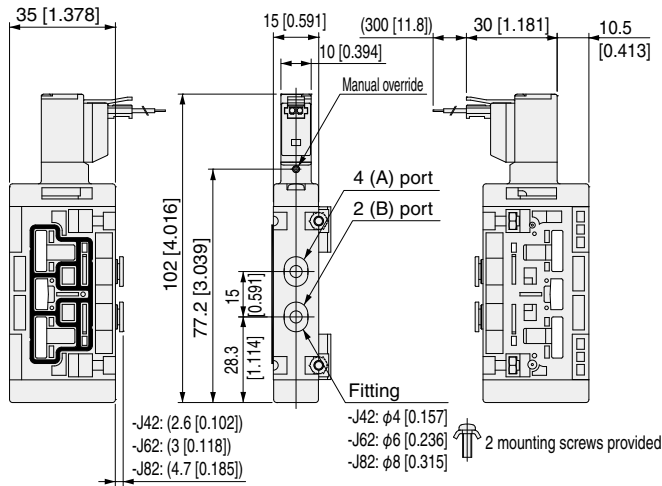
[Warranty Period]

- The warranty period for this product is 12 months from the date of delivery. However, failure, loss of performance, or loss of function due to normal degradation is outside the scope of warranty, even if it is within the warranty period.

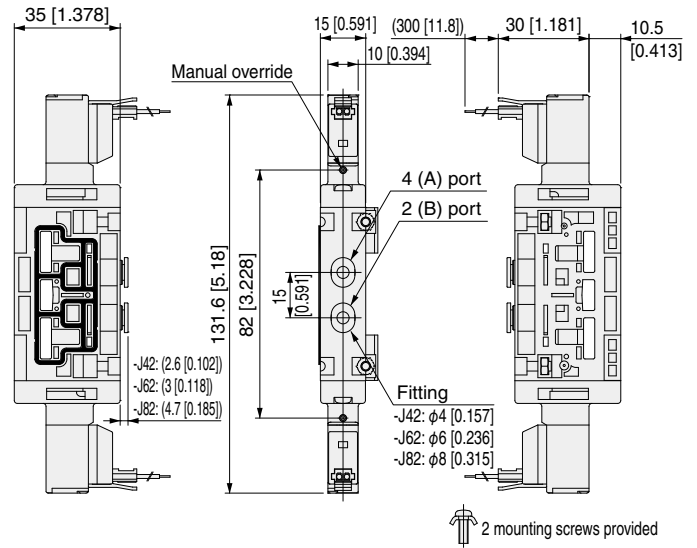
Before use, be sure to read the "Safety Precautions" and "General Precautions" in the general catalog.

■ Single valve unit (With quick fittings for mm tubes)

IBZR8-4E1-J□-PL 5-port single solenoid

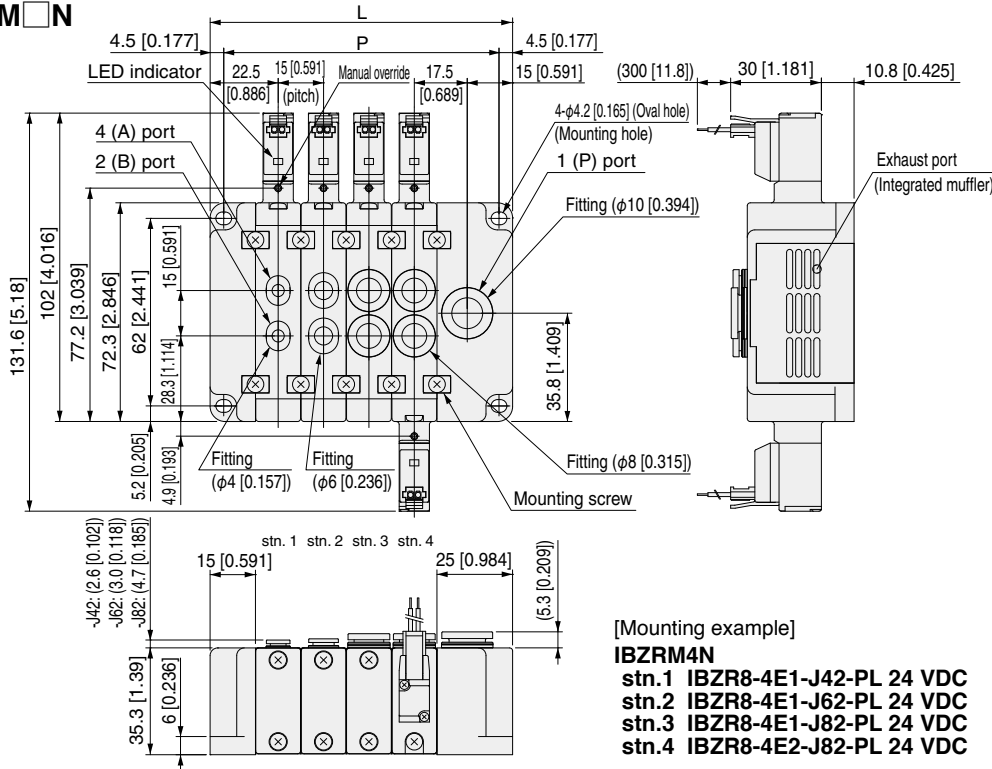


IBZR8-4E2-J□-PL 5-port double solenoid



■ Manifold

IBZR8M□N



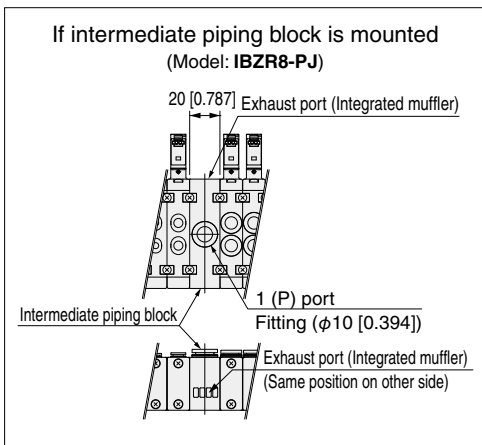
Unit dimensions

Number of units	L ^{Note}	P ^{Note}
1	55 [2.165]	46 [1.811]
2	70 [2.756]	61 [2.402]
3	85 [3.346]	76 [2.992]
4	100 [3.9]	91 [3.583]
5	115 [4.5]	106 [4.2]
6	130 [5.1]	121 [4.8]
7	145 [5.7]	136 [5.4]
8	160 [6.3]	151 [5.9]
9	175 [6.9]	166 [6.5]
10	190 [7.5]	181 [7.1]
11	205 [8.1]	196 [7.7]
12	220 [8.7]	211 [8.3]
13	235 [9.3]	226 [8.9]
14	250 [9.8]	241 [9.5]
15	265 [10.4]	256 [10.1]
16	280 [11]	271 [10.7]
17	295 [11.6]	286 [11.3]
18	310 [12.2]	301 [11.9]
19	325 [12.8]	316 [12.4]
20	340 [13.4]	331 [13]

[Mounting example]

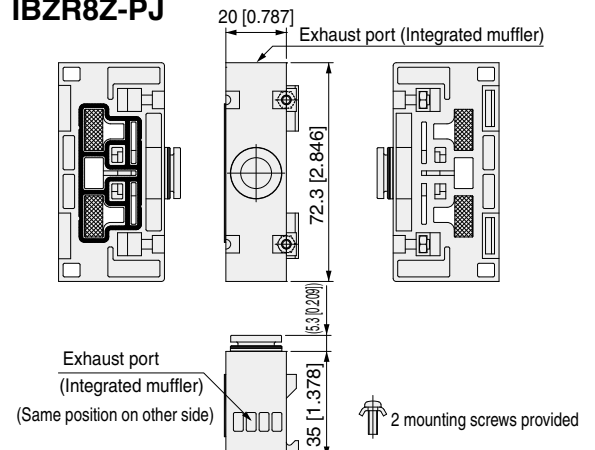
- IBZRM4N**
- stn.1 IBZR8-4E1-J42-PL 24 VDC
- stn.2 IBZR8-4E1-J62-PL 24 VDC
- stn.3 IBZR8-4E1-J82-PL 24 VDC
- stn.4 IBZR8-4E2-J82-PL 24 VDC

Note: If intermediate piping blocks are mounted, add 20 mm [0.787 in] for each of the intermediate piping blocks in L and P.

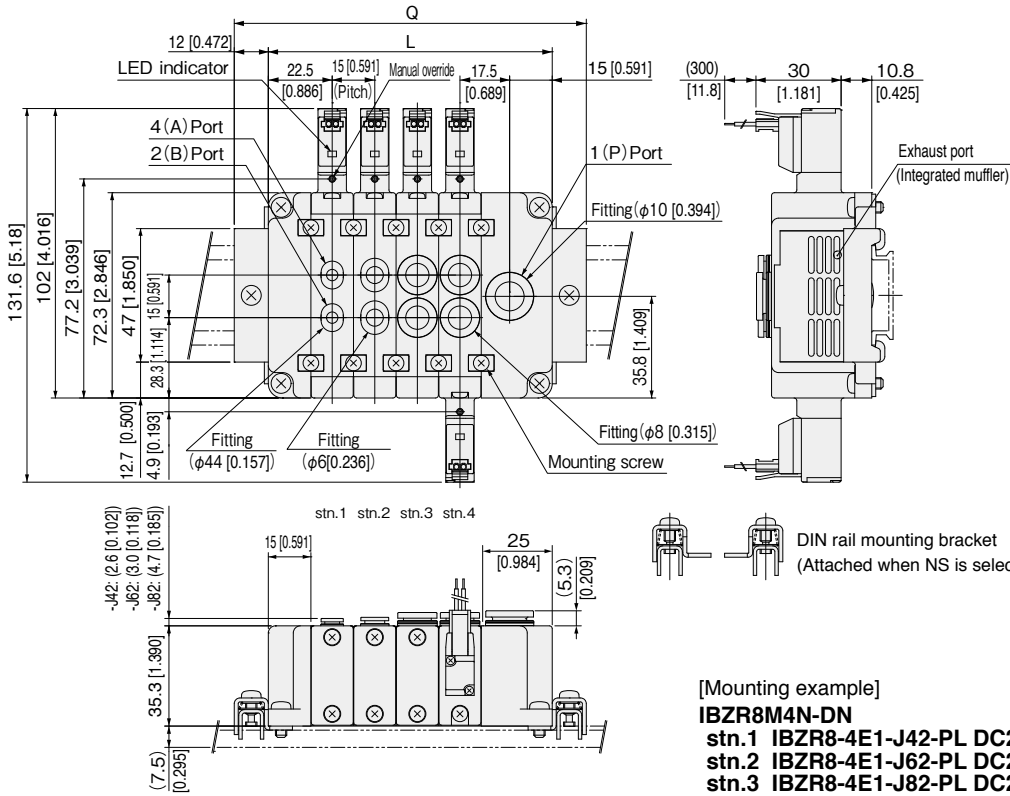


■ Intermediate piping block (single unit)

IBZR8Z-PJ



Manifold (With DIN rail mounting bracket)
IBZR8M□N-DN (With quick fitting for mm tubes)



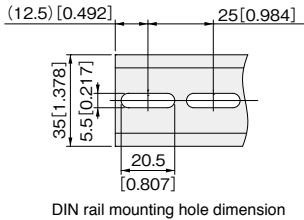
Unit dimensions

Number of units	L ^{Note}	Q ^{Note}
1	55[2.165]	79[3.110]
2	70[2.756]	94[3.701]
3	85[3.347]	109[4.291]
4	100[3.937]	124[4.882]
5	115[4.528]	139[5.472]
6	130[5.118]	154[6.063]
7	145[5.709]	169[6.654]
8	160[6.299]	184[7.244]
9	175[6.890]	199[7.835]
10	190[7.480]	214[8.425]
11	205[8.071]	229[9.016]
12	220[8.661]	244[9.606]
13	235[9.252]	259[10.197]
14	250[9.843]	274[10.787]
15	265[10.433]	289[11.378]
16	280[11.023]	304[11.969]

Note: If intermediate piping blocks are mounted, add 20 mm [0.787 in] for each of the intermediate piping blocks in L and P.

[Mounting example]
IBZR8M4N-DN
 stn.1 IBZR8-4E1-J42-PL DC24V
 stn.2 IBZR8-4E1-J62-PL DC24V
 stn.3 IBZR8-4E1-J82-PL DC24V
 stn.4 IBZR8-4E2-J82-PL DC24V

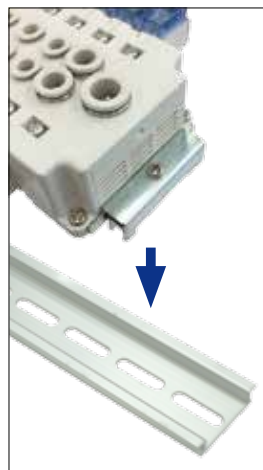
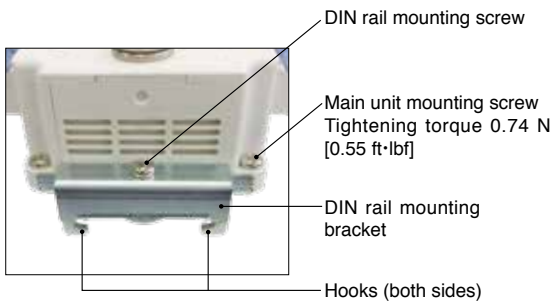
DIN rail
DIN-□



DIN rail mounting brackets

As shown in below images, first make sure that the DIN rail mounting bracket is mounted on both sides of the manifold. Then securely connect the hooks of both sides to the DIN rail from above, and fix the position with DIN rail mounting screws.

NOTE When the DIN rail mounting bracket is selected, the maximum is number of valves is 16 stations.

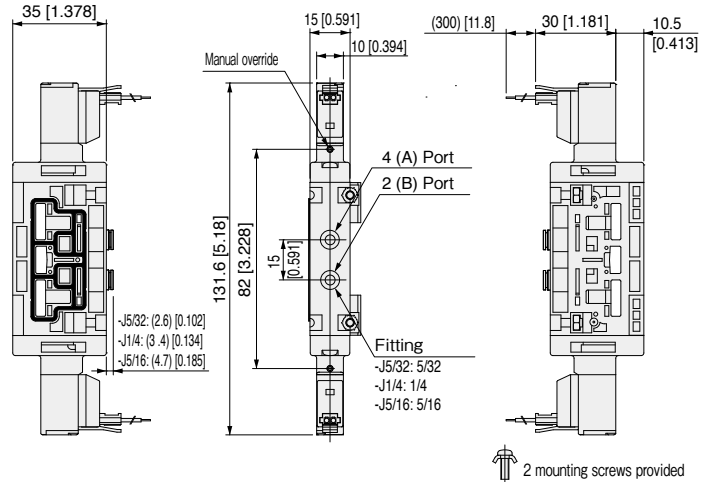
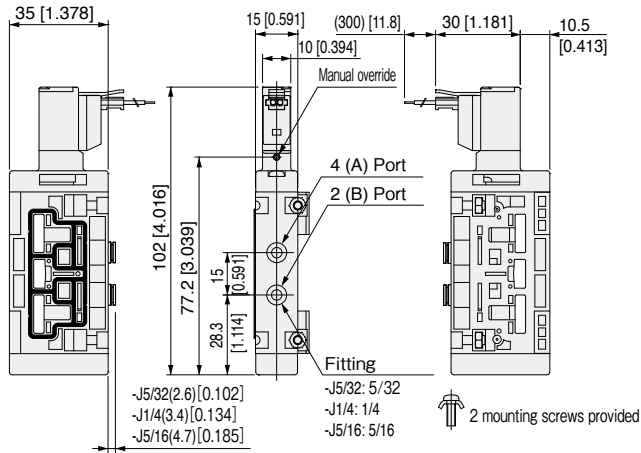


Fix with DIN rail mounting screw
 Tightening torque 0.74 N [0.55 ft·lbf]
 (Same for other side)

■ Single valve unit (With quick fittings for Inch tubes)

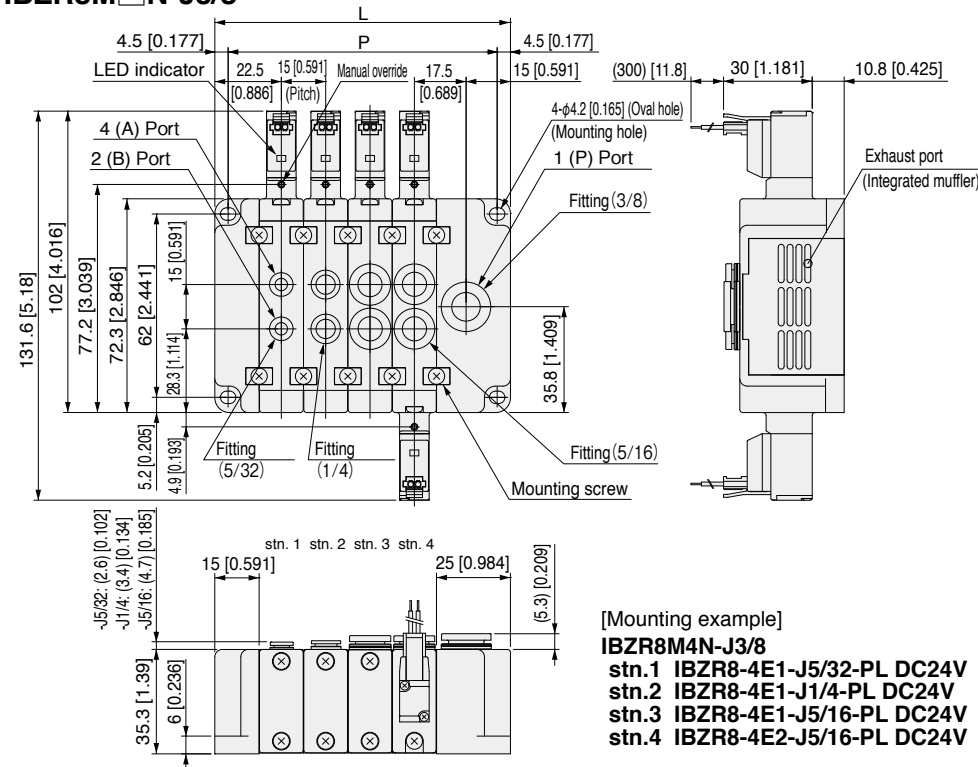
IBZR8-4E1-J□-PL 5-port single solenoid

IBZR8-4E2-J□-PL 5-port double solenoid



■ Manifold (With quick fittings for Inch tubes)

IBZR8M□N-J3/8



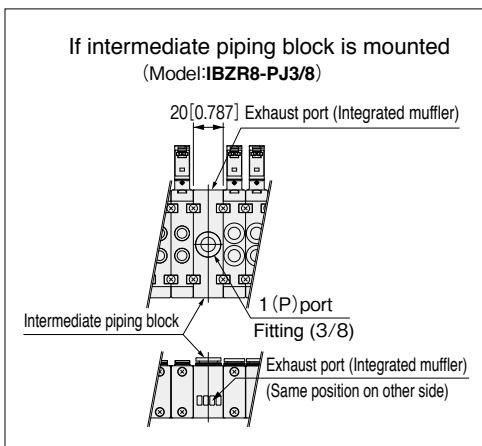
Unit dimensions

Number of units	L ^{Note}	P ^{Note}
1	55 [2.165]	46 [1.811]
2	70 [2.756]	61 [2.402]
3	85 [3.346]	76 [2.992]
4	100 [3.937]	91 [3.583]
5	115 [4.528]	106 [4.173]
6	130 [5.118]	121 [4.764]
7	145 [5.709]	136 [5.354]
8	160 [6.299]	151 [5.945]
9	175 [6.890]	166 [6.535]
10	190 [7.480]	181 [7.126]
11	205 [8.071]	196 [7.717]
12	220 [8.661]	211 [8.307]
13	235 [9.252]	226 [8.898]
14	250 [9.843]	241 [9.488]
15	265 [10.433]	256 [10.079]
16	280 [11.024]	271 [10.669]
17	295 [11.614]	286 [11.260]
18	310 [12.205]	301 [11.850]
19	325 [12.795]	316 [12.441]
20	340 [13.386]	331 [13.031]

Note: If intermediate piping blocks are mounted, add 20 mm [0.787 in] for each of the intermediate piping blocks in L and P.

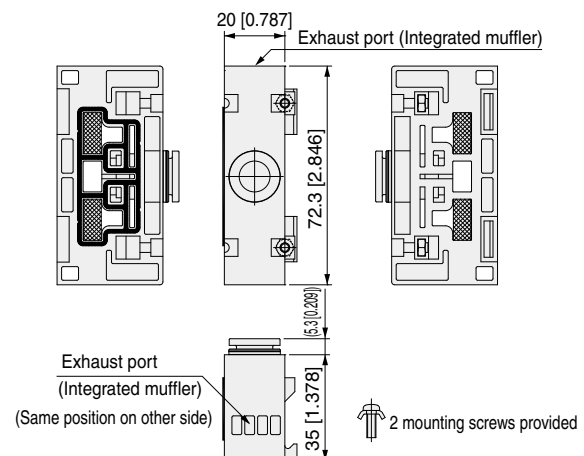
[Mounting example]

- IBZR8M4N-J3/8
- stn.1 IBZR8-4E1-J5/32-PL DC24V
- stn.2 IBZR8-4E1-J1/4-PL DC24V
- stn.3 IBZR8-4E1-J5/16-PL DC24V
- stn.4 IBZR8-4E2-J5/16-PL DC24V

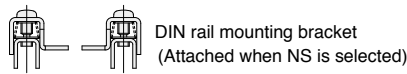
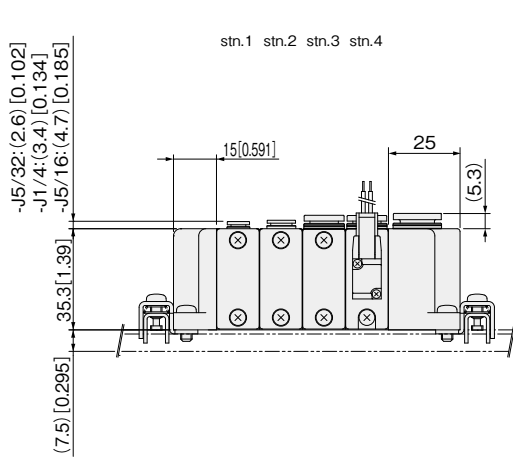
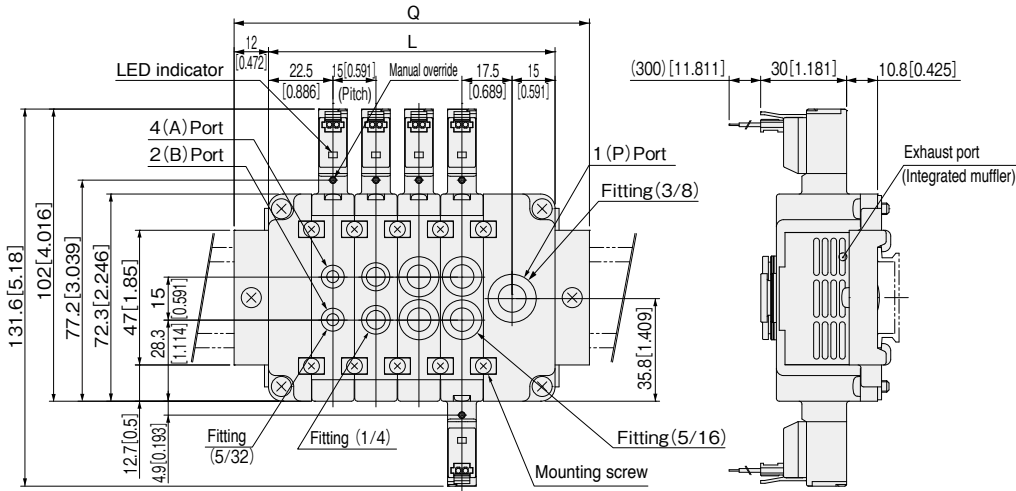


■ Intermediate piping block (single unit)

IBZR8Z-PJ3/8 (With quick fittings for Inch tubes)



Manifold (With DIN rail mounting bracket)
IBZR8M□N-DN-J3/8 (With quick fittings for Inch tubes)



[Mounting example]

IBZR8M4N-DN-J3/8

- stn.1 IBZR8-4E1-J5/32-PL DC24V
- stn.2 IBZR8-4E1-J1/4-PL DC24V
- stn.3 IBZR8-4E1-J5/16-PL DC24V
- stn.4 IBZR8-4E2-J5/16-PL DC24V

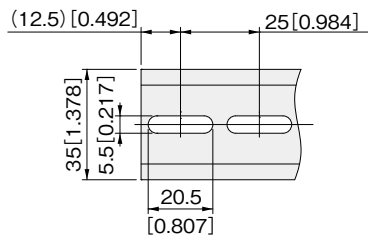
Unit dimensions

Number of units	L ^{Note}	Q ^{Note}
1	55 [2.165]	77 [3.031]
2	70 [2.756]	94 [3.701]
3	85 [3.346]	109 [4.291]
4	100 [3.937]	124 [4.882]
5	115 [4.528]	139 [5.472]
6	130 [5.118]	154 [6.063]
7	145 [5.709]	169 [6.654]
8	160 [6.299]	184 [7.244]
9	175 [6.890]	199 [7.835]
10	190 [7.480]	214 [8.425]
11	205 [8.071]	229 [9.016]
12	220 [8.661]	244 [9.606]
13	235 [9.252]	259 [10.197]
14	250 [9.843]	274 [10.787]
15	265 [10.433]	289 [11.378]
16	280 [11.024]	304 [11.969]

Note: If intermediate piping blocks are mounted, add 20 mm [0.787 in] for each of the intermediate piping blocks in L and P.

DIN rail

DIN-□



DIN rail mounting hole dimension

MEMO

A series of horizontal dashed lines for writing.

MEMO

A series of horizontal dashed lines for writing.

Limited Warranty

KOGANEI CORP. warrants its products to be free from defects in material and workmanship subject to the following provisions.

Warranty Period The warranty period is 180 days from the date of delivery.

Koganei Responsibility If a defect in material or workmanship is found during the warranty period, KOGANEI CORP. will replace any part proved defective under normal use free of charge and will provide the service necessary to replace such a part.

Limitations

- This warranty is in lieu of all other warranties, expressed or implied, and is limited to the original cost of the product and shall not include any transportation fee, the cost of installation or any liability for direct, indirect or consequential damage or delay resulting from the defects.

- KOGANEI CORP. shall in no way be liable or responsible for injuries or damage to persons or property arising out of the use or operation of the manufacturer's product.

- This warranty shall be void if the engineered safety devices are removed, made inoperative or not periodically checked for proper functioning.

- Any operation beyond the rated capacity, any improper use or application, or any improper installation of the product, or any substitution upon it with parts not furnished or approved by KOGANEI CORP., shall void this warranty.

- This warranty covers only such items supplied by KOGANEI CORP. The products of other manufacturers are covered only by such warranties made by those original manufacturers, even though such items may have been included as the components.

The specifications are subject to change without notice.

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