CKD

SM-190975-A

INSTRUCTION MANUAL

SELEX VALVE
REDUCED WIRING TYPE
MN4S0 - T30, T50, T10, T11

- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

CKD Corporation

For Safety Use

To use this product safely, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (to the level pursuant to JIS B 8370 Pneumatic System Rules).

We do not bear any responsibility for accidents caused by any person without such knowledge or arising from improper operation.

Our customers use this product for a very wide range of applications, and we cannot keep track of all of them. Depending on operating conditions, the product may fail to operate to maximum performance, or cause an accident. Thus, before placing an order, examine whether the product meets your application, requirements, and how to use it.

This product incorporates many functions and mechanisms to ensure safety. However, improper operation could result in an accident. To prevent such accidents, read this instruction manual carefully for proper operation.

Observe the cautions on handling described in this manual, as well as the following instructions:

⚠ Precautions

- Incorrect address settings of serial transmission slave stations could cause the solenoid valve and the cylinder to malfunction. Before using the product, check the set addresses of the slave stations.
- For operation of serial transmission slave stations, read the communication system operation manual carefully.
- Do not touch electric wiring connections (exposed live parts) : this will cause an electric shock. During wiring, keep the power off. Also, do not touch these live parts with wet hands.

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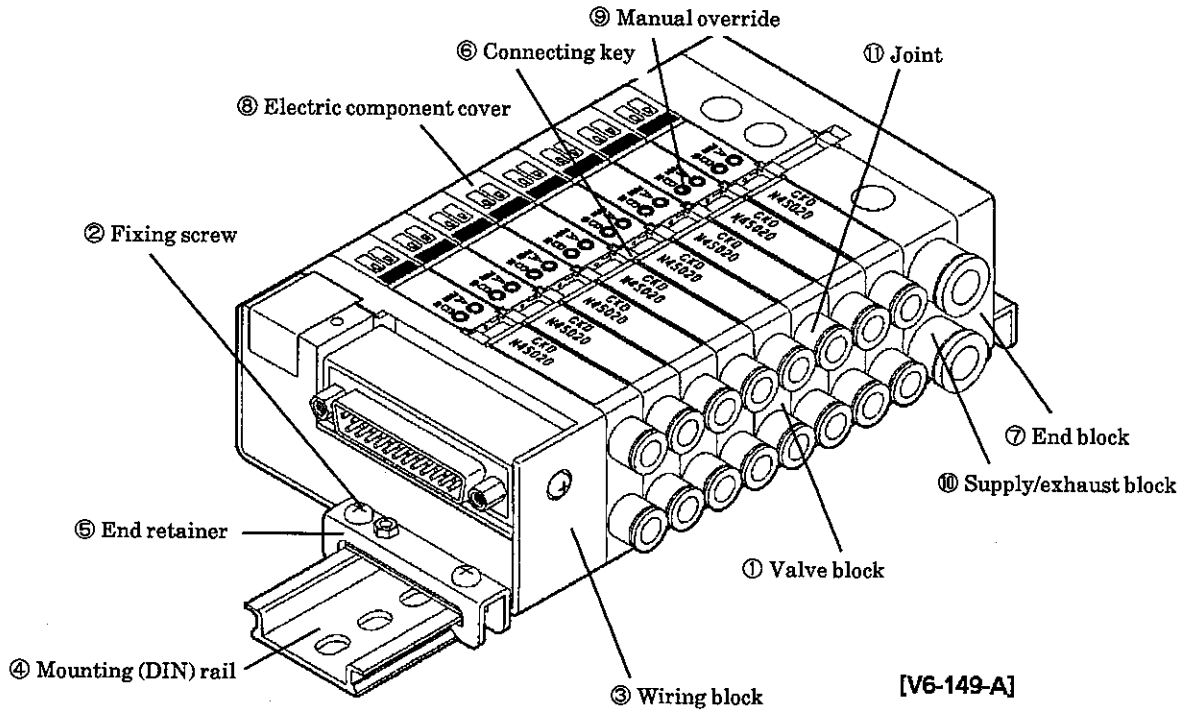
Selex Valve Reduced Wiring Type
Manual No. SM 190975-A

NOTE : Letters & figures enclosed within Gothic style bracket (examples such as [C2-4PP07] · [V2-503-B] etc.) are editorial symbols being unrelated with contents of the book.

Dec.3.1994
Revision : Dec.26.2001

1. PRODUCT

1.1 Names and functions



① **Valve block**

② **Manifold fixing screw**
There are two fixing screws for both end blocks, securing the entire manifold to the DIN rail.

③ **Wiring block**
The block has a built-in printed circuit board with a relay connector.

④ **Mounting rail (DIN rail)**

⑤ **End retainer**
It is temporarily fixed to the wiring block and the end block.

⑥ **Connecting key**
The key is pushed in after the connection of the blocks in order to secure the connection.

⑦ **End block**
Located opposite the wiring block, the end block secures the entire manifold to the DIN rail. It has a function of common supply/exhaust flow plugging and a built-in muffler (option).

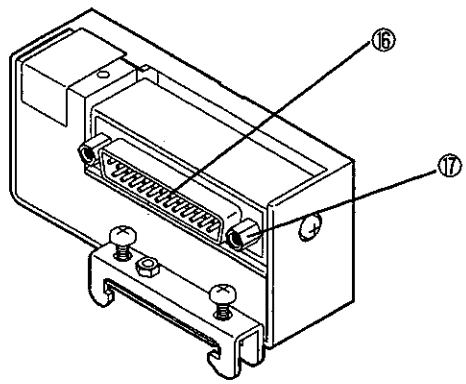
⑧ **Electric component cover**
The electricity indicator lamp comes on inside the white frame when the solenoid is energized. The 'a' solenoid and the 'b' solenoid are red and green, respectively, when they are lighted.
The cover is closed to protect the cable. It has a simple dust-proof design.

⑨ **Manual override**

⑩ **Supply/exhaust block**

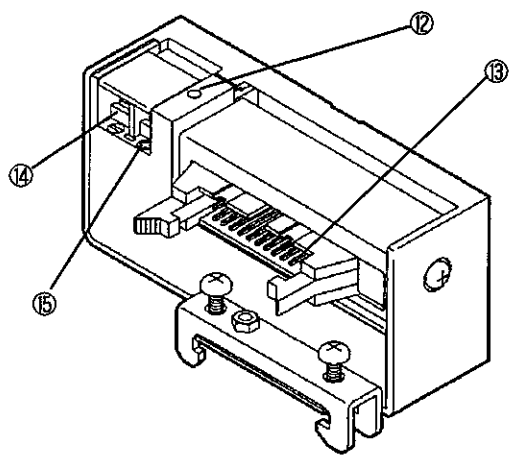
⑪ **Joint**
The joint is a replaceable cartridge push-in type.

○ D sub-connector type (T30)



[V6-149-B]

○ Flat cable type (T50)



[V6-149-C]

⑫ **Power indicator lamp**
The lamp comes on when the power is on with the correct polarity.

⑬ **20-pin connector**
A common connector for the control terminals of the manifold electromagnetic valve.

⑭ **Power terminal stand**
The stand is used when it is necessary to obtain power from outside.

⑮ **Power polarity mark**

⑯ **D-sub 25-pin connector**
A common connector for the control terminals of the manifold electromagnetic valve.

⑰ **Fixing screw**
The screw is used to secure the connectors. (m2.6)

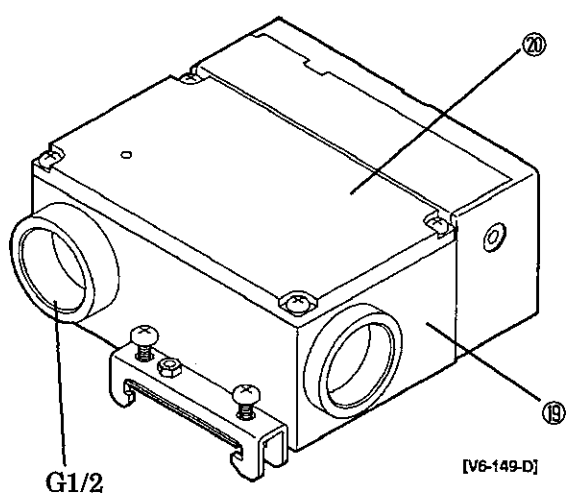
⑱ **Common terminal stand (14 poles)**
A common stand for the control terminals of the manifold electromagnetic valve.

⑲ **Terminal block**
The block fixes the terminal stand inside the wiring block.

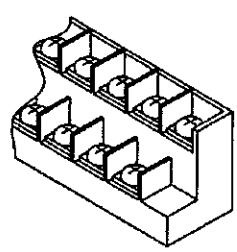
⑳ **Protection cover**
The cover protects the terminal stand.

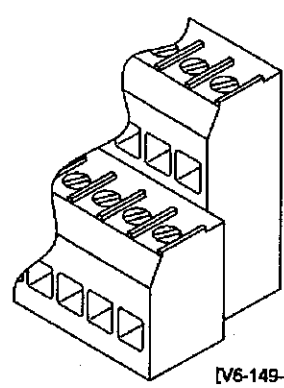
㉑ **Common terminal stand (24 poles)**

○ Common terminal stand type (T10, 11)



[V6-149-D]


[V6-149-E]


[V6-149-F]

⑱ **Terminal stand with 14 poles**
MS screw fixing

㉑ **Terminal stand with 24 poles**
Minus-head push fastening

※ For the wiring block, both the left side (standard) and right side (option) specifications are available.

1.2 Specifications

Manifold specifications

Model / Item		MN4S0	MT4S0
Manifold system		DIN rail mount	Direct mount
Electromagnetic valve		N4S0 series	
No. of stations		2 stations (refer to the table, maximum No. of stations, of the following wiring specifications)	8 stations
Manifold type		Common supply/common exhaust	
Ambient temperature ℃		5 to 50	
Atmosphere		No corroding gas	
Fluid temperature ℃		5 to 50	
Connection port size	Supply port (P) Exhaust port (R)	Push-in joint, ϕ8. ϕ6 and ϕ1/4 joints are manufactured after receiving of firm order.	
	Cylinder port (A, B)	Push-in joint, ϕ4, ϕ6, M5	
	External pilot port (PA option)	Push-in joint, ϕ6	

When using the external pilot, only the supply and exhaust blocks are different from those stated above.
The applicable electromagnetic valves are common to the external pilot.

Electromagnetic valve specifications

Model	4-port valve					3-port valve	
	2 positions		3 positions			2 positions	
Item	Single	Double	All port block	ABR connection	PAB connection	Normal close	Normal open
	N4S010	N4S020	N4S030	N4S040	N4S050	N3S010	N3S0110
Operation fluid	Compressed air						
Operation method	Pilot soft spool						
Minimum operation pressure MPa	0.2						
Maximum operation pressure MPa	0.7						
Guaranteed withstanding pressure MPa	1.05						
Effective cross-sectional area mm^2	4.0		3.0	3.6	3.0	4.0	
※1 Response time ms	20 or less		30 or less			20 or less	
Lubrication	Unnecessary (If lubrication is required, use turbine oil ISO VG32 , 1st grade.)						
Protection construction	Dust-proof						
Manual override	Non-lock type (standard), Lock type (option) Non-lock凸type, Lock凸type (No tools are required.)						

※1 The response time shown in the table is when the power is on with the supply pressure of 0.5 MPa and no lubrication. It changes depending on the supply pressure and the type of oil in the case of lubrication.

Electric specifications

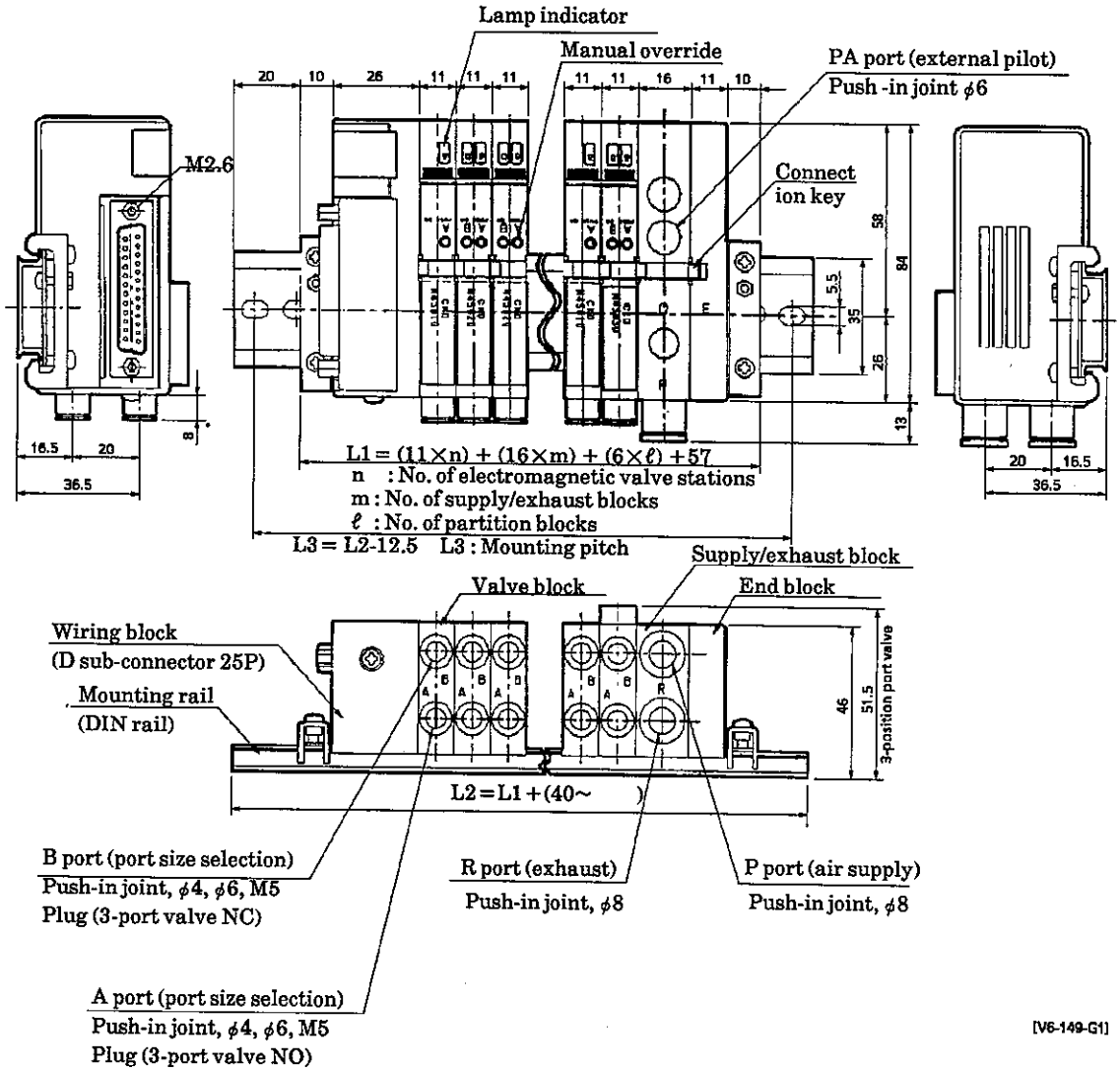
Rated voltage V	DC12, DC24
Rate current A	0.050, 0.025
Power consumption W	0.6
Power fluctuation range	±10%
Insulation class	B
Surge protection circuit	Diode
Indicator	Light-emitting diode

Wiring specifications

Item		Description	Maximum No. of stations		
			Double solenoid	Single solenoid	Mixed manifold (No. of solenoid points)
Common terminal stand type	T10 (left side) T10R (right side)	Terminal screw size M3	7 stations	14 stations	(14 points)
	T11 (left side) T11R (right side)	26-poles push-fastening type	12 stations	24 stations	(24 points)
D sub-connector type	T30 (left side) T30R (right side)	MIL-standard D sub-connector (25 terminals) can be connected.	12 stations	24 stations	(24 points)
Flat cable connector type	T50 (left side) ..... T50R (right side)	Pressure-connection socket 20 P that complies with the MIL-C-83503 standard, with a stain relief, and 20 flat cables 1.27-mm pitch	8 stations	16 stations	(16 points)
Serial transmission	T621	Omron Corporation SYSMA (-series,applicable to the SYSBUS wire system and multi-link	8 stations	16 stations	(16 points)
	T631	Mitsubishi Electric Corporation MELSEC Aseriesa pplicable to the MELSEC NET/MINI-S3 data link system	8 stations	16 stations	(16 points)
	T6A0 ..... T6A1	Applicable to the uni-wire system. Each manufacture's PC, personal computer, and SBC can be connected. For details, see the catalog (CC-N-345) and technical manual (CT-N-345).	4 stations ..... 8 stations	8 stations ..... 16 stations	(8 points) ..... (16 po ints)
	T6C0 ..... T6C1	Omron Corporation SYSMA (-series, C200HS, and CQM1-series applicable to CompoBus/S.	4 stations ..... 8 stations	8 stations ..... 16 stations	(8 points) ..... (16 points)
Individual wiring connector	C	Lead wires are connected from each valve block using connectors. The common line is common to the double-wiring.	–	–	–

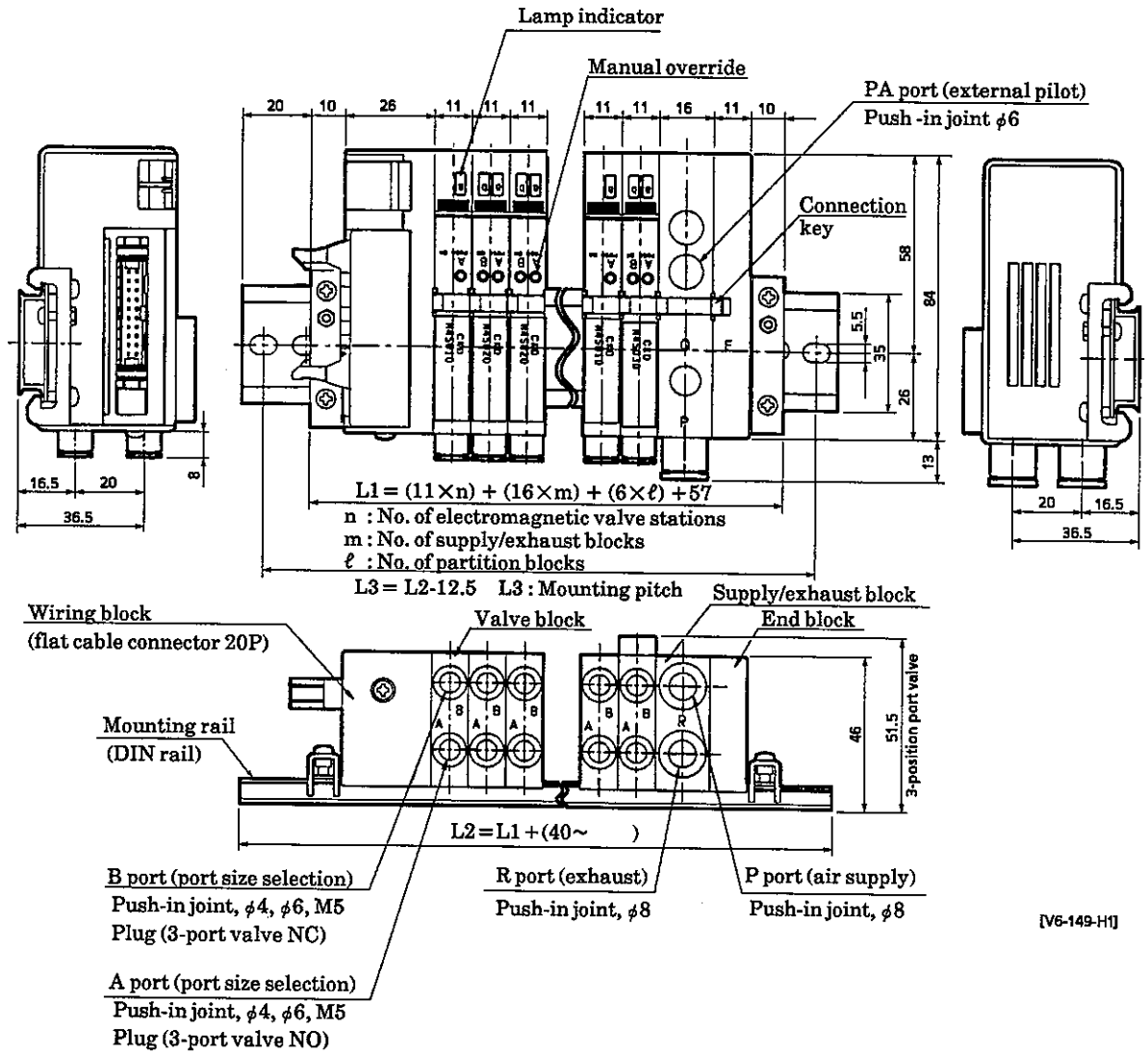
1.3 Dimensions

○ MN4S0※0-※-※T30-※



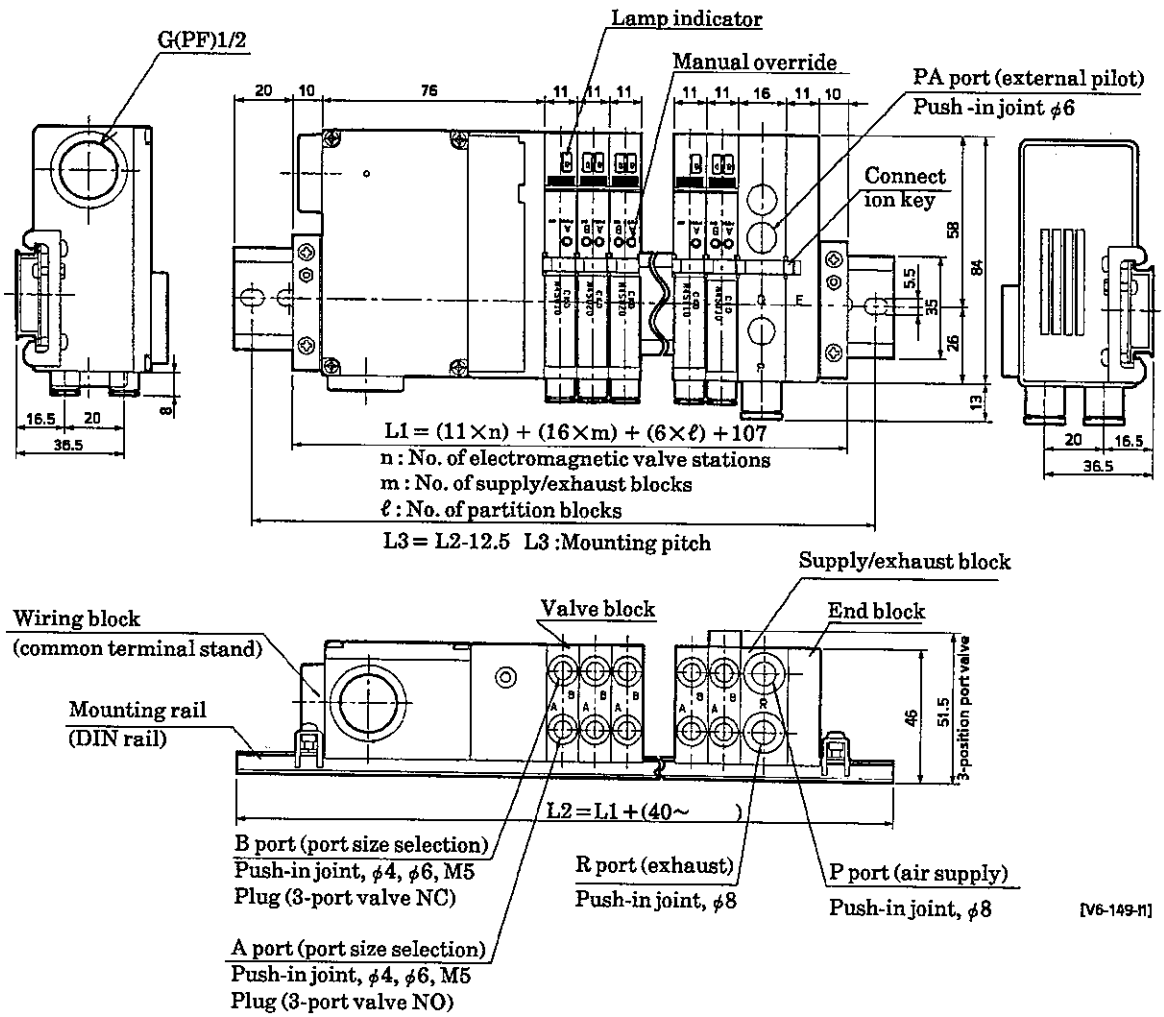
For the right side wiring specifications, the wiring block and end block are swapped.

○ MN4S0※0-※-※T50-※



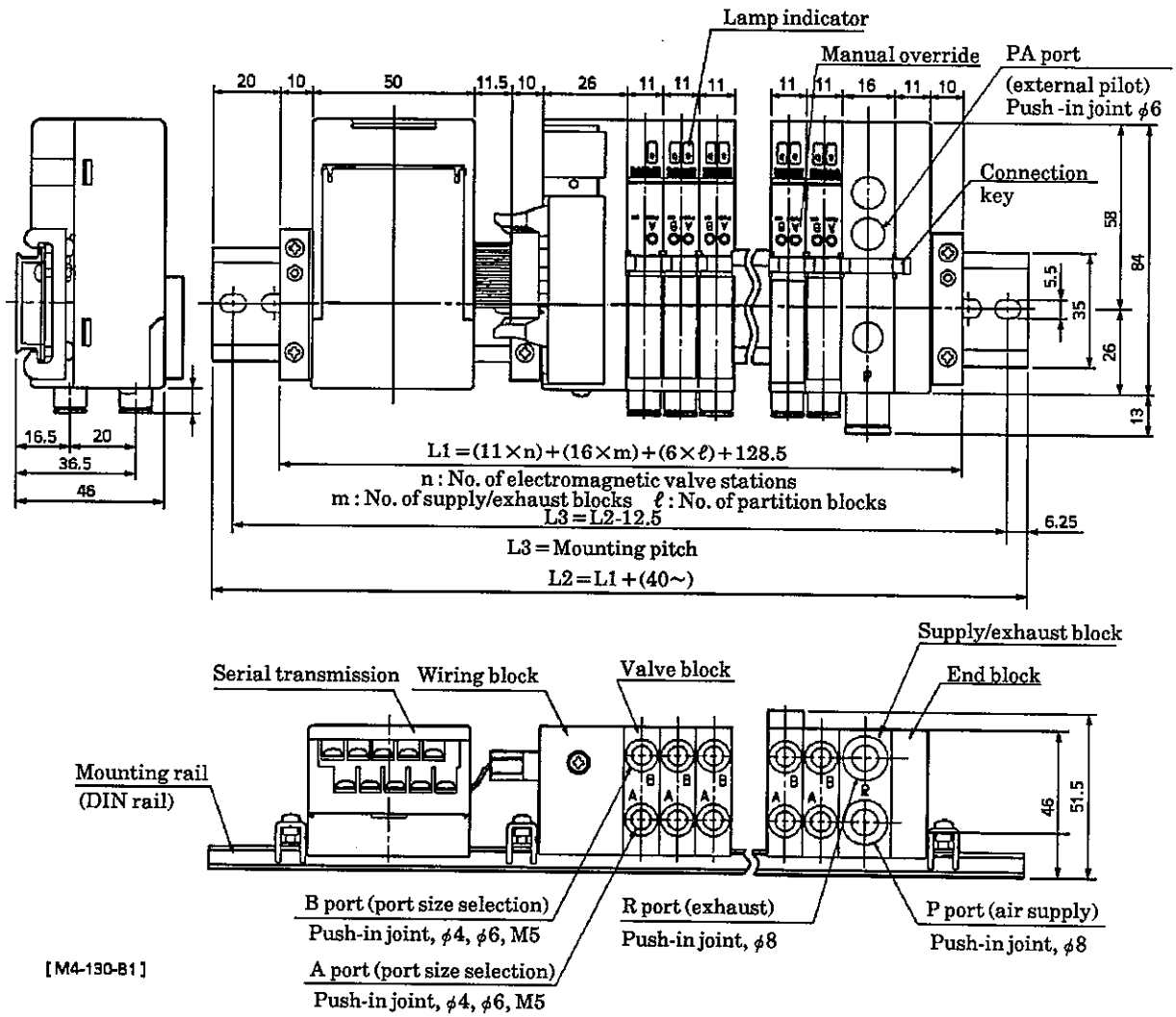
For the right side wiring specifications, the wiring block and end block are swapped.

○ MN4S0※0-※-※T10-※
T11



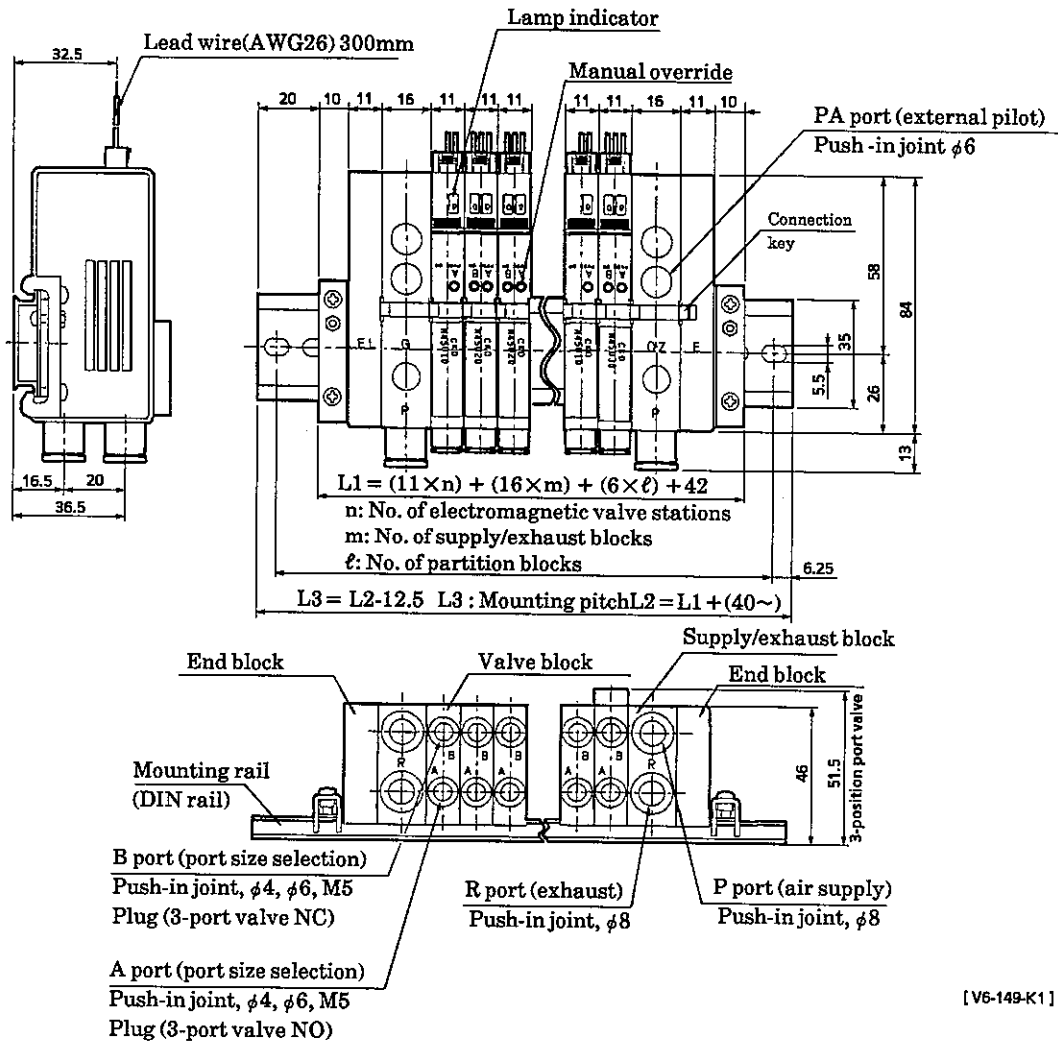
For the right side wiring specifications, the wiring block and end block are swapped.

○ MN4S0※0 - ※ - ※T6※※ - ※



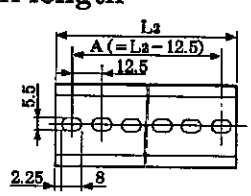
[M4-130-B1]

○ MN4S0※0-※-※C-※



[V6-149-K1]

○ Selection of the DIN rail length



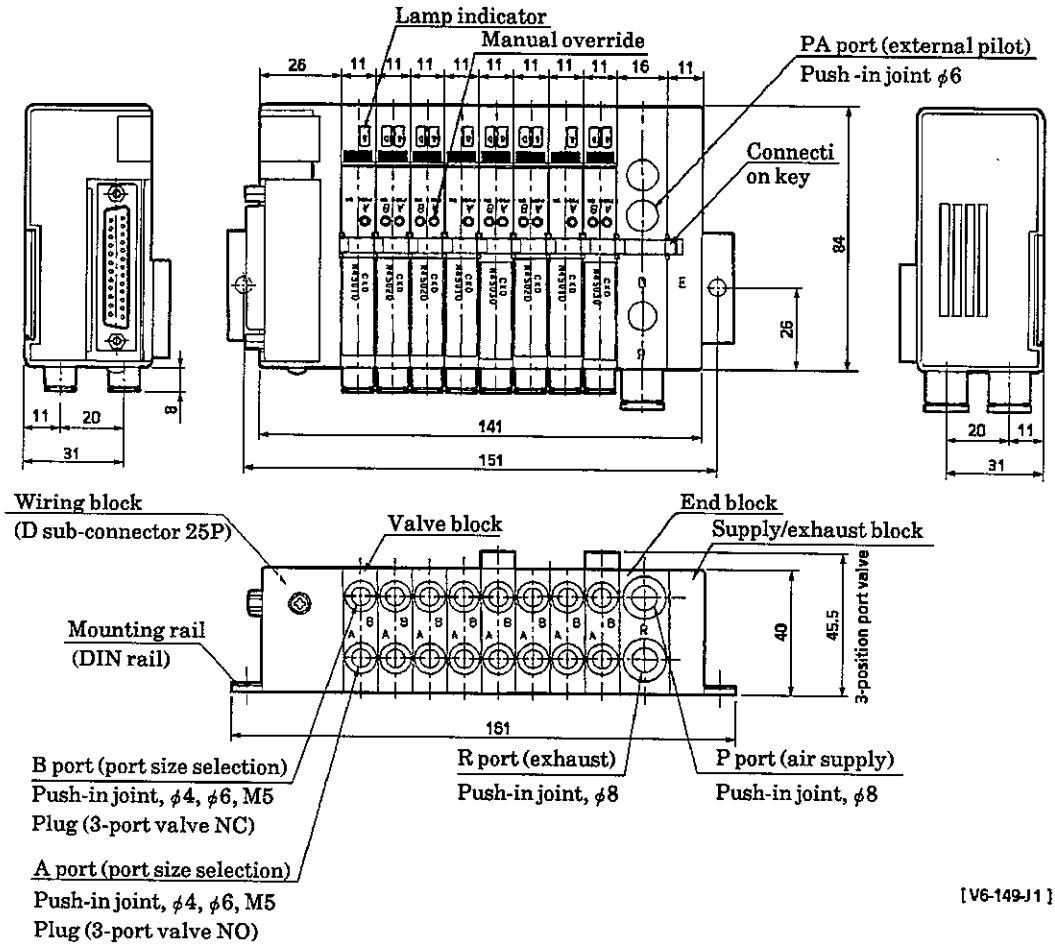
L1: Manifold length		L2: Rail length	A: Mounting pitch
	110 or less	150	137.5
110-~	122.5	162.5	150
122.5	135	175	162.5
135	147.5	187.5	175
147.5	160	200	187.5
160	172.5	212.5	200
172.5	185	225	212.5
185	197.5	237.5	225
197.5	210	250	237.5

[V6-138-K]

L1: Manifold length		L2: Rail length	A: Mounting pitch
210	222.5	262.5	250
222.5	235	275	262.5
235	247.5	287.5	275
247.5	260	300	287.5
260	272.5	312.5	300
272.5	285	325	312.5
285	297.5	337.5	325
297.5	310	350	337.5

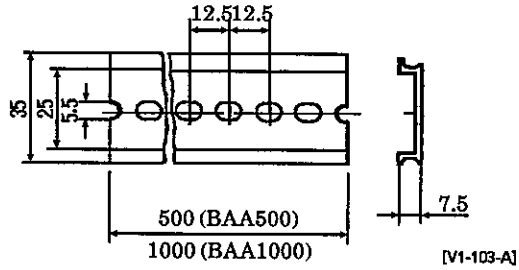
For the manifold with the length of more than 310, count it as a multiple of 12.5.

○ MT4S0※0-※-※T※-8-※ (8-station limit)



1.4 Related equipment

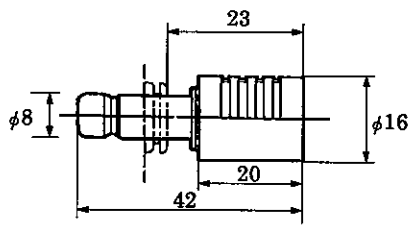
1) Mounting rail (BAA)



[V1-103-A]

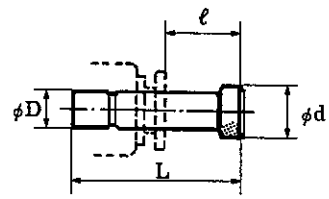
Model	L
BAA500	500
BAA1000	1000

2) Silencer



[V1-103-B]

3) Blank plug



[V1-103-C]

Model	D	L	ℓ	d
GSP4-B	ϕ4	27	12	6
GSP6-B	ϕ6	29	12.5	8
GSP8-B	ϕ8	33	12.5	10

4) Tube

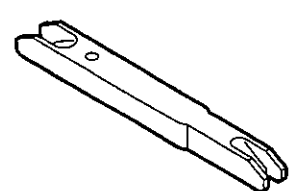
(1) Soft nylon tube, F-15 Ⓐ

(2) Urethane tube, U-95 Ⓐ

Tubes with unsatisfactory outer diameter precision or hardness affect the chucking power or make insertion difficult.

Ⓐ Proper outer diameters	
04	ϕ4
06	ϕ6
08	ϕ8

5) One-touch joint tube removal jig


[V6-149-L]

2. CAUTION

2.1 Caution on use

1) Air quality

(1) The compressed air contains a large amount of drain, oxidized oil, tar, pipe rust and other foreign matters, causing the product to malfunction or shorten its operation life. The exhaust also pollutes the air. Improve the air quality to prevent these unfavorable consequences.

(2) To remove impurities, carry out thorough flushing on the air source side and the cylinder side before piping. Fit the air source with an air filter that does not allow the passage of particles 5 microns or larger. Make sure to perform draining.

(3) The MN4S0 does not require lubrication. When activating an actuator that requires lubrication, use turbine oil ISOVG32 (non-additive), 1st grade, as a lubricant. Do no use spindle oil or machine oil as it may cause the product to malfunction. Also avoid excessive lubrication or halting the lubrication halfway through as it may cause the grease to flow out and cause the product to malfunction and other troubles.

(4) The response time described in the specifications of the electromagnetic valve is the figure when the power is on, under 0.5 MPa and with no lubrication. Excessive lubrication may cause a response delay.

(5) Excessively dry air may cause the lubricant to scatter and shorten the product life as a result.

2) Environmental conditions

Avoid the use of the MN4S0 under the following conditions. If they cannot be avoided, make sure to protect the product with a cover, a case or other means.

(1) When the ambient temperature is outside the +5~+50 C range.

(2) A place exposed to water drops or scattered machining oil.

(3) Dusty air.

(4) A place with high humidity, susceptible to dew condensation following temperature changes.

(5) Air that contains corrosive gas.

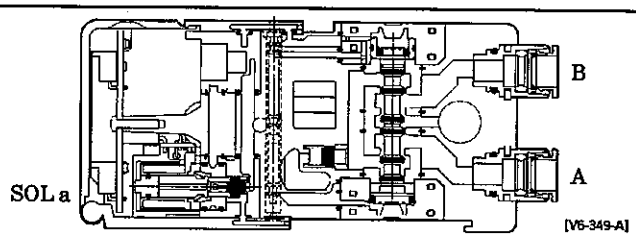
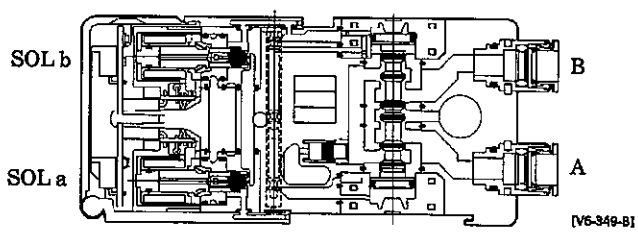
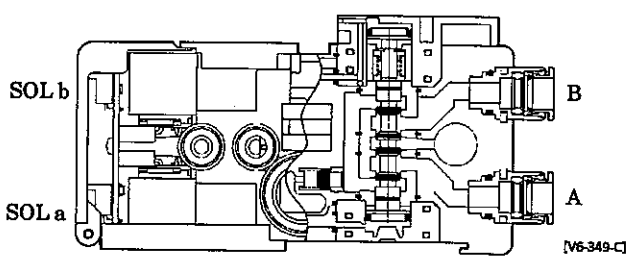
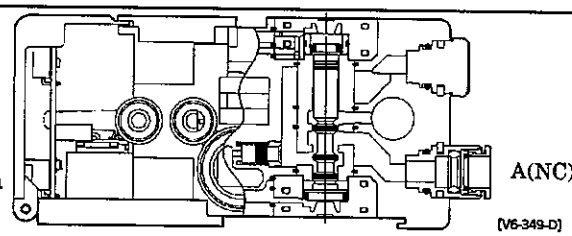
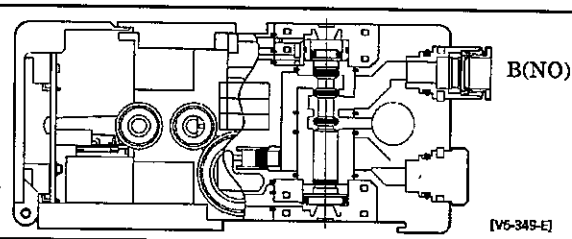
(6) A place exposed to salty wind or scattered sea water.

(7) Direct sun.

3. OPERATION

3-1. Operation

1) Unit operation drawings

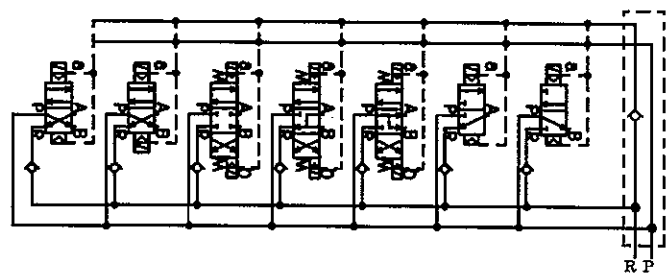
	Operating drawing	Operation
N4S010		Power off (illustrated) P→B A→R Power on P→A B→R
N4S020		The two solenoids are set parallel to each other; the upper one is SOL.b and the lower one is SOL.a. Solenoid a energized P→A B→R Solenoid b energized (illustrated) P→B A→R The solenoids retain their switching position even after the power is turned off.
N4S030	 This drawing is of the N4S030.	Power off, P, A, B, and R closed ※1
N4S040		Power off, P is closed, A、B→R ※1
N4S050		Power off, P→A、B R is closed
N3S010		
N3S0110		

※1 Refer to the N4S010 for the operation of each solenoid when the power is on.

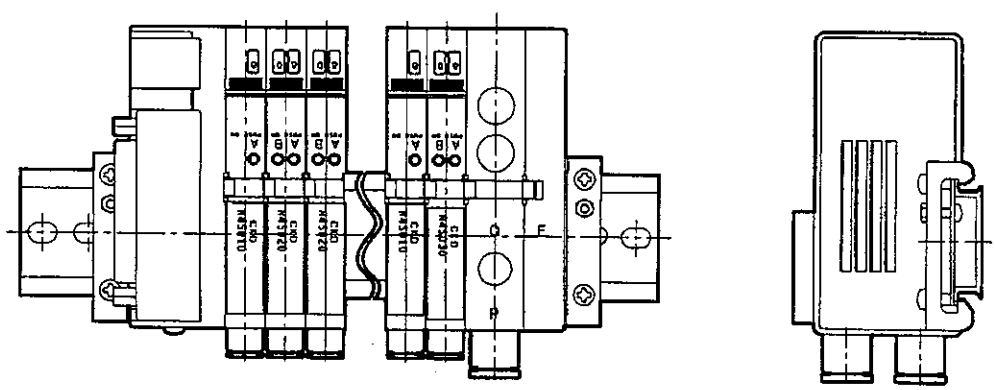
2) Manifold function

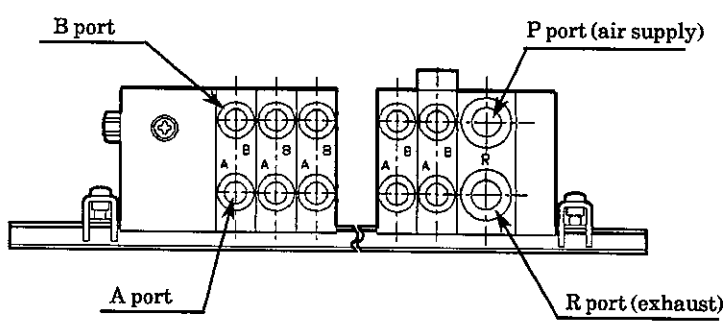
The main exhaust R and pilot exhaust (PR) gather in the supply/exhaust block and are discharged from the exhaust port.

Air pressure circuit



N4S010 N4S020 N4S030 N4S040 N4S050 N3S010 N4S0110 N4S0-0

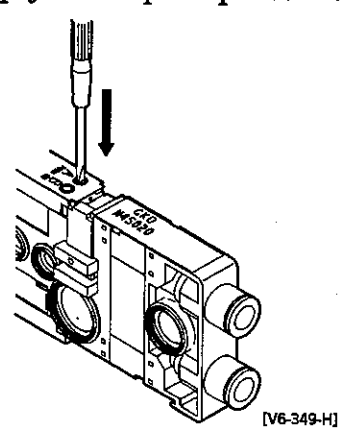




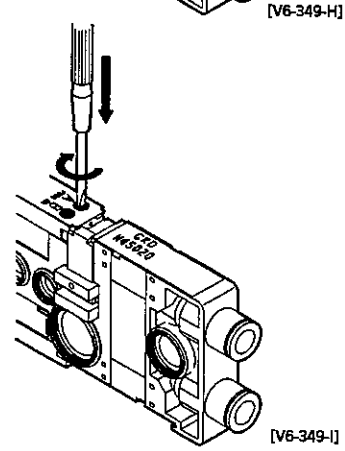
[V6-349-G]

3-2. Caution on operation

1) Power circuit and wiring
   (1) When the valve is activated by a programmable controller or other means, it may malfunction because of output leakage current. Make sure that the current in the circuit is no more than 1 mA.
   (2) Set the energizing time at 0.1 second or more in the case of an instantaneous energizing operation of the double solenoid type.
   (3) The surface temperature of the manifold increases during continuous energizing. This is normal, but make a necessary arrangement for good ventilation or heat discharge.
   (4) Read the manual carefully before disassembly or assembly of the product for replacing or adding blocks. Pay extra attention to connector joining.
   (5) The common wiring has been set. The external connection terminals or pin numbers are determined for each wiring type, and the manifold station numbers are set one by one from the left as you look at the piping port in the front. Refer to the cautions for each wiring method.
2) Manual operation
   The product adopts an indirect drive method with pilot pressure switching. It does not function, therefore, without the supply of the pilot pressure.
   - Non-lock type manual override
     Use a small screwdriver or a similar tool with a pointed end to push the button (2 mm in diameter) on the upper face of the valve until it does not go any further. Push the A button to activate the 'a' coil, and the B button to engage the 'b' coil. With the single type, the button returns to its original position when released; with the double type, the button returns, but the main valve maintains its position. Check the position of the main valve with the cylinder output.


[V6-349-H]

   - Lock-type manual override
     Unlike the non-lock type, the system is locked by pushing the button with a flat-tip screwdriver and turning it 90 degrees in the direction shown by the arrow in the drawing. Make sure to release the lock before regular operations.


[V6-349-I]

4. INSTALLATION

4-1. Piping

1) During installation

Observe the following at the time of piping and mounting.

(1) There are no rules regarding the mounting attitude.

(2) To prevent malfunctions, do not install the product in a place susceptible to the vibration of 50 m/s^2 or more or the impact of 300m/s^2 or more.

(3) Do not throttle the air supply pipe as it may cause a response delay due to the lowered pressure during a multi-station operation.

(4) Do not use the cylinder port side while it is opened to the atmosphere. The product may malfunction as a result of reduced air-supply pressure. Use the external pilot system. The lower-limit pressure is 0.2 MPa for the internal pilot system.

(5) Do not throttle the exhaust air as much as possible so as to avoid a response delay of the cylinder. Adjust the speed between the cylinder and the valve.

(6) When making the cylinder stop at an intermediate point by the 3-position all-port block valve, make sure that there is no leakage from the pipe joints and inside the cylinder. Such leakage may cause the product to move slightly during a stop. Use a cylinder with a brake if the product is to be left unused for a long period of time or if high stopping precision is required.

2) Piping tube

Standard valve pipes have push-in joints. Avoid piping tubes with unsatisfactory outer diameter precision, wall thickness or hardness to prevent disconnection or leakage. Use the tubes recommended by CKD as indicated below.

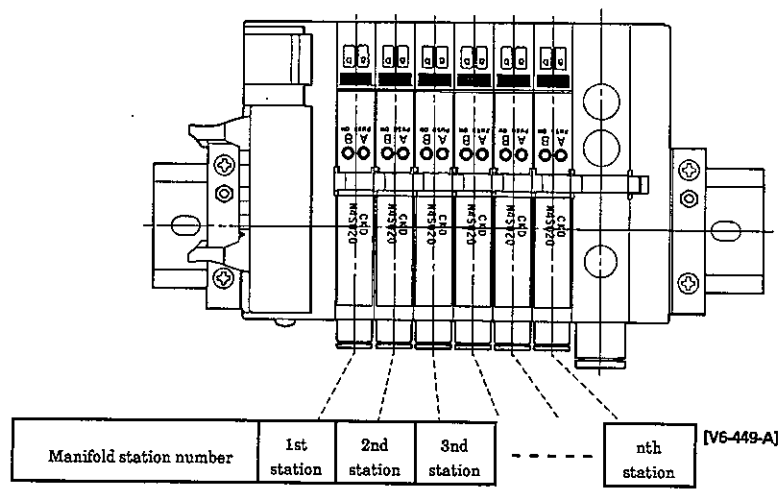
Tube	Outer diameter	Tolerance	Inner diameter	Minimum bending radius
Soft nylon F-1500 Series	ϕ4	±0.1	ϕ2.5	10
	ϕ6		ϕ4	20
	ϕ8		ϕ5.7	30
Urethane U-9500 Series	ϕ4	+0.1 −0.15	ϕ2	10
	ϕ6		ϕ4	20
	ϕ8	+0.1 −0.2	ϕ5	30

4-2. Electric wiring

1) Flat cable type (T50)

(1) T50 connector

The connector used in the T50 complies with the MIL standard (MIL-C-83503). Its flat-cable press-connection design makes wiring work easy. Pin numbers may differ from one PC manufacturer to another, but their functions are the same. Use the connector and the reversed triangle mark in the drawing below as a reference point for arrangement. The triangle mark serves as a reference point for both the plug and the socket. The manifold stations are set one by one from left to right with the piping port in the front.



(2) Cautions regarding the connector type (T50)

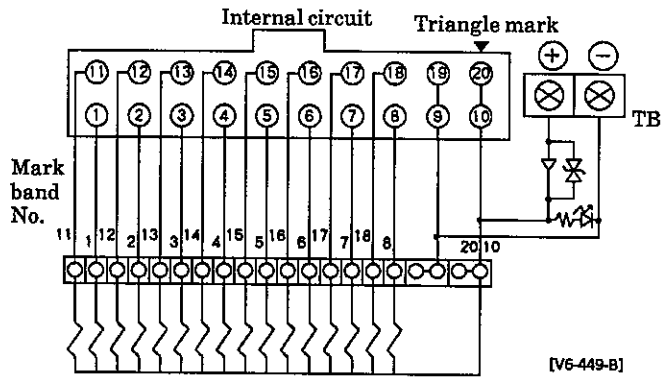
① It is necessary to match the signal arrangement of the PC output unit and that of the valve side. Since direct connection with the PC is limited, use cables specified by the PC manufacturer.

② The operation power is DC24V or DC12V.

③ When driving the T50 by an ordinary output unit, use the + terminals (20, 10) of the 20-P connector as the + side common and use an NPN transistor output open collector type as the drive circuit.

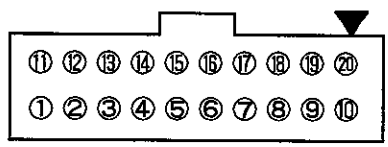
④ Make sure to connect the manifold to the output unit. Never connect it to the input unit as a problem will involve not only this unit, but also other related equipment as well, seriously aggravating the situation.

⑤ Voltage drops will occur depending on cable lengths or at the time of simultaneous power supply. Make sure that a voltage drop for the solenoid is within 10% of the rated voltage.



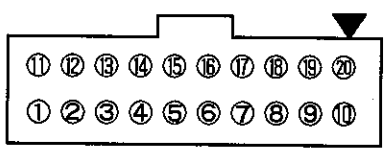
(3) Wiring method

Single solenoid valve (up to 16 manifold stations).



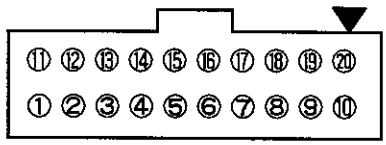
Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	9a	10a	11a	12a	13a	14a	15a	16a	− power	+ power
Pin No.	1	2	3	4	5	6	7	8	9	10
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	− power	+ power

Double solenoid valve (up to 8 manifold stations).



Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	5a	5b	6a	6b	7a	7b	8a	8b	− power	+ power
Pin No.	1	2	3	4	5	6	7	8	9	10
Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	− power	+ power

Mixed (single,double) solenoid valve (up to 16 solenoids).



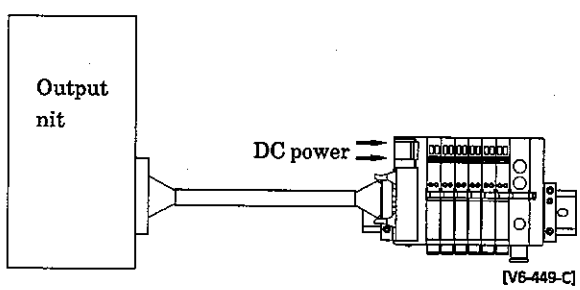
Pin No.	11	12	13	14	15	16	17	18	19	20
Valve No.	7a	7b	8a	9a	10a	10b	11a	11b	− power	+ power
Pin No.	1	2	3	4	5	6	7	8	9	10
Valve No.	1a	2a	3a	3b	4a	4b	5a	6a	− power	+ power

Note : The numbers in valve No. 1a, 2a, 2b...indicate the station No.1, station No.2 and so on, while the alphabets a and b mean, respectively, the solenoid on the side a and the solenoid on the side b.

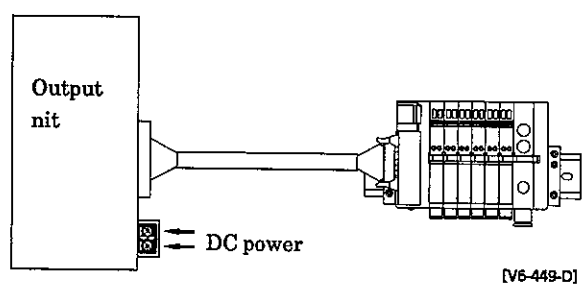
(4) Power supply

The terminal stand is designed to accept power supplied from an external source when such outside power supply is needed. Supply the power to the wiring block or the input/output unit in the manner as shown in the following drawings. The power indicator lamp comes on after the connection has been made correctly. For wiring, check the polarity marks on the cover. Wiring errors cause malfunctions.

M3×6 screws are used for the terminal stand. Use M3 screws 6.4 or less in width to fasten the crimp terminals at the tightening torque of 0.3~0.5 N · m.



[V6-449-C]

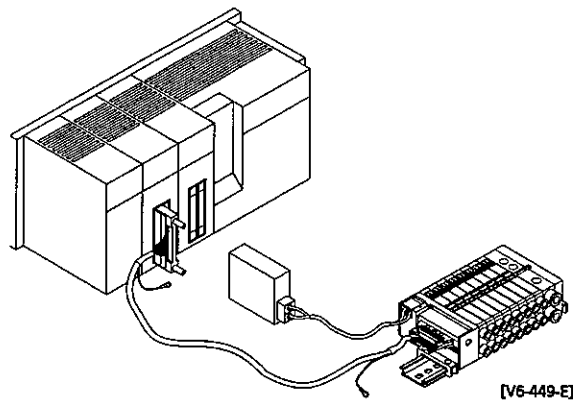


[V6-449-D]

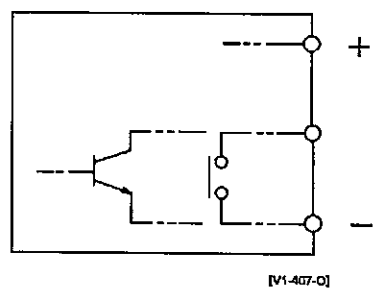
(5) Connection to PLC

ⓐ The units described below can be directly connected to the output unit by the designated cable. Make sure to have the combinations right, as combination errors may cause serious problems. Use cables designated by the manufacturer.

Manufacturer	PLC model	Connecting cable model
Omron Corporation	Model C200H-0D215 Model C500-0D415CN	Model G79- C
	Model C500-0D4213	Model G79-0 DC
Matsushita Electric Works, Ltd.	AFP33484	AY15133~7
	AFP53487	AY15223~7
Idec Izumi Corporation	PF3S-T32K	The same specifications as Omron's


[V6-449-E]

ⓑ When making a connection to units other than the PLC mentioned above, make sure that the signal line and power line are wired correctly. Even if the connectors have the same shape, their pin arrangements may not be the same with different manufacturers or unit types. Check the pint arrangement before the wiring. For the output unit, use one with a contact between the minus side of the power source and the output point, or one with an NPN transistor open collector output.

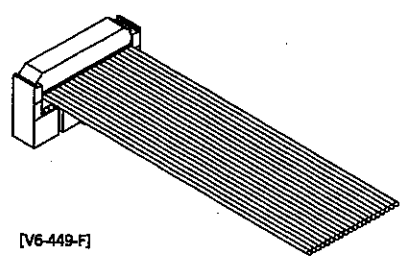


[V1-407-0]

(6) Cable production

To produce a connecting cable, we recommend the following equipment for the valve side. Make a correct selection and connection of the cable according to the catalog data sheet. The equipment shown here all complies with the MIL standard (MIL-C-83503); thus, there are many others that can be also used for connection, but their locking mechanism may not be suitable.

If so, secure the lock lever with a band.


[V6-449-F]

· Socket XG4M-2030 (Omron Corporation)
Strain relief XG4T-2004
· Loose wire press-connect connector XG5M-2032 (Omron Corporation)
· Loose wire press-connect connector XG5M-2035 (Omron Corporation)

(7) Cable

The system uses flat cables or slender multi-conductor cables.

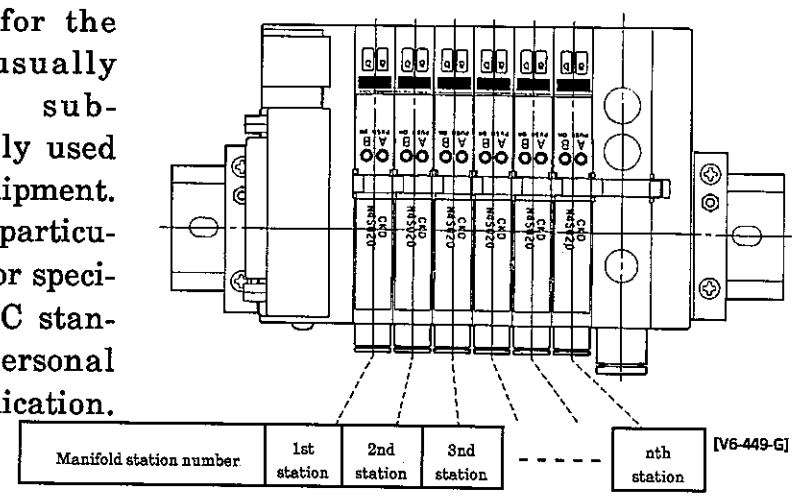
As these cables have fine core wires, it should be checked that they have enough mechanical strength and electric capacity.

· Make sure to make a rounded corner (R) when bending the flat cable.
· The cable has large electric resistance (AWG28, approx. 0.22 ohm/m). Pay special attention to voltage drop along the cable.

2) D sub-connector type (T30)

(1) T30 connector

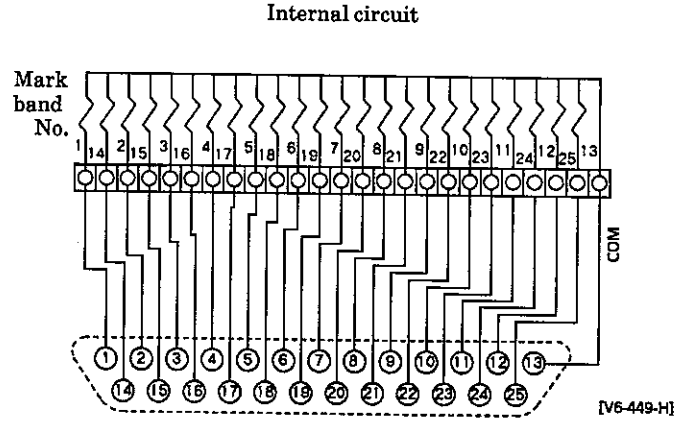
The connector for the T30, which is usually called the D sub-connector, is widely used in FA and OA equipment. The 25P type, in particular, is the connector specified in the RS232C standard for use in personal computer communication.



Manifold stations are arranged from left to right with the piping port in the front.

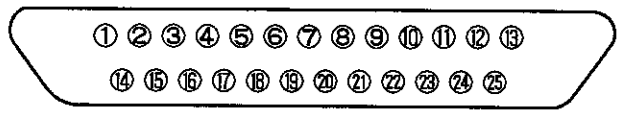
(2) Cautions regarding the connector type (T30)

① It is necessary to match the signal arrangement of the PC output unit and that on the valve side.
② The operation power is DC24V or DC12V.
③ Voltage drops will occur depending on cable lengths or at the time of simultaneous power supply. Make sure that a voltage drop for the solenoid is within 10% of the rated voltage.



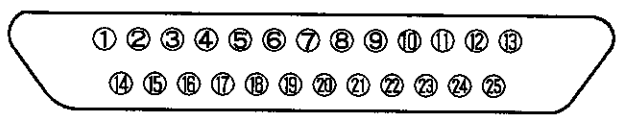
(3) Wiring method

Single solenoid valve (up to 24 manifold stations).



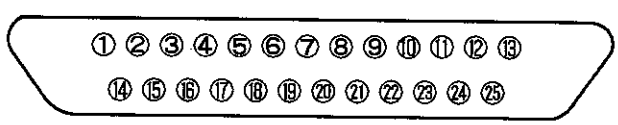
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	3a	5a	7a	9a	11a	13a	15a	17a	19a	21a	23a	COM
Pin No.	14	15	16	17	18	19	20	21	22	23	24	25	
Valve No.	2a	4a	6a	8a	10a	12a	14a	16a	18a	20a	22a	24a	

Double solenoid valve (up to 12 manifold stations).



Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	COM
Pin No.	14	15	16	17	18	19	20	21	22	23	24	25	
Valve No.	1b	2b	3b	4b	5b	6b	7b	8b	9b	10b	11b	12b	

Mixed (single, double) solenoid valve (up to 20 solenoids).



Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Valve No.	1a	3a	4a	5a	7a	8a	10a	11b	12b	14a	16a	18a	COM
Pin No.	14	15	16	17	18	19	20	21	22	23	24	25	
Valve No.	2a	3b	4b	6a	7b	9a	11a	12a	13a	15a	17a	18b	

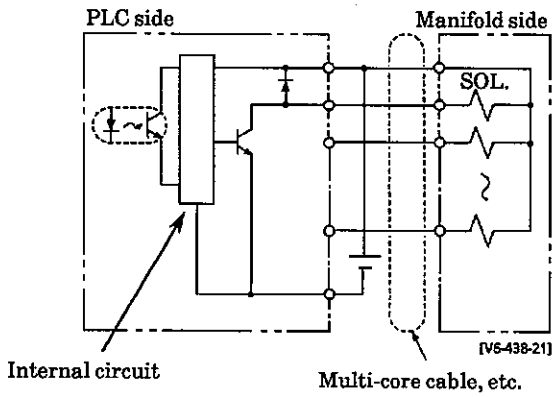
Note : The numbers in valve No. 1a, 2a, 2b... indicate the station No.1, station No.2 and so on, while the alphabets a and b mean, respectively, the solenoid on the side a and the solenoid on the side b.

(4) Connection to PLC

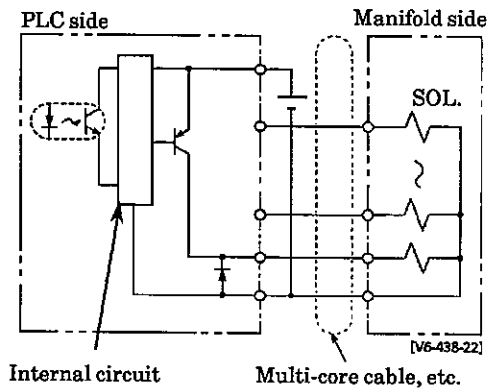
The common wiring has been internally done on the manifold side.

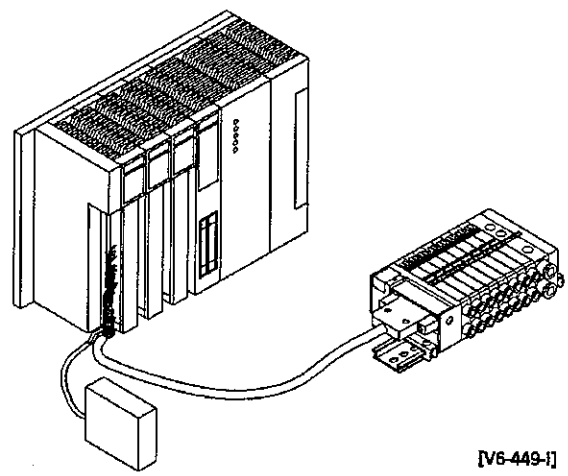
Since the electromagnetic valve has no polarity, it can be connected to either the NPN output or PNP output of the DC output unit of the PLC. Wire each unit in the following manner.

DC output unit (NPN output)



DC output unit (PNP output)





(5) Cable production

We recommend the following for the valve side in the production of the connection cable.

Name	Model	Manufacturer
D sub-connector socket solder type	HDBB-25S	Hirose Electric Co., Ltd.
D sub-connector socket solder type	JAZ-25S	Nippon Atchaku Tanshi
D sub-connector socket crimp type	CDB-25S	Hirose Electric Co., Ltd.
D sub-connector socket crimp type	JAC-25S	Nippon Atchaku Tanshi
Plug case (for the solder type) (with M2.6 screw)	HDB-CTF	Hirose Electric Co., Ltd.
Plastic cover with M2.6 screw	JCB-25M	Nippon Atchaku Tanshi

Avoid the use of the press-connect type as much as possible as it has small electric capacity and the fine core wire of the able causes large voltage drop.

(6) CKD cable specifications
(CKD cables of the following models can be used)

Model

N4T – Cable – D 0 ※1 – ※2

※1 Connecting method on the user side

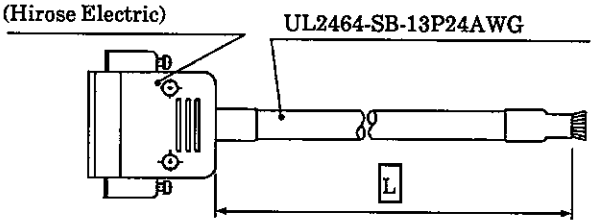
0	Cutting only
1	With round crimp terminal for M3.5 screws

※2 Cable length

1	1m
3	3m
5	5m

○ N4T cable D00- L

HDBB-25S
(Hirose Electric)



[V6-438-23]

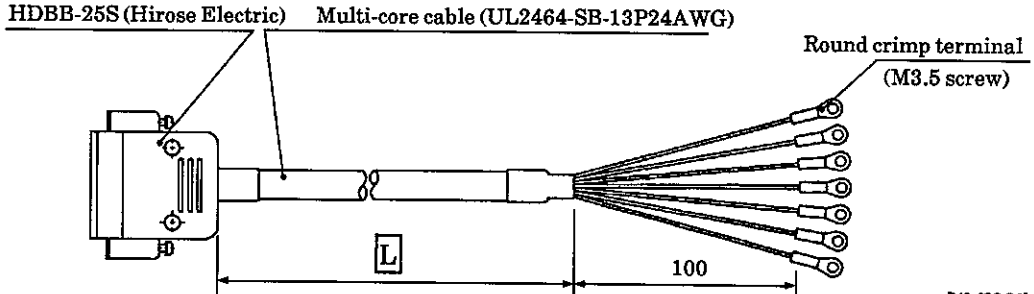
D sub-connector terminal numbers and core wires

D sub-connector terminal No.		1	2	3	4	5	6	7	8	9	10	11	12	13
Wire end identification	Color of insulator	Orange	Orange	Yellow	Yellow	Green	Green	Gray	Gray	White	White	Orange	Orange	Yellow
	Kind of markings	1-dot									2-dots			
	Color of marking	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black

D sub-connector terminal No.		14	15	16	17	18	19	20	21	22	23	24	25
Wire end identification	Color of insulator	Yellow	Green	Green	Gray	Gray	White	White	Orange	Orange	Yellow	Yellow	Green
	Kind of markings	2-dots							3-dots				
	Color of marking	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black

○ N4T cable D01- L

HDBB-25S (Hirose Electric) Multi-core cable (UL2464-SB-13P24AWG)



[V6-438-24]

D sub-connector terminal numbers and core wires

D sub-connector terminal No.		1	2	3	4	5	6	7	8	9	10	11	12	13
Wire end identification	Color of insulator	Orange	Orange	Yellow	Yellow	Green	Green	Gray	Gray	White	White	Orange	Orange	Yellow
	Kind of markings	1-dot										2-dot		
	Color of marking	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black
Marked tube No.		1	2	3	4	5	6	7	8	9	10	Cut off	Cut off	13

D sub-connector terminal No.		14	15	16	17	18	19	20	21	22	23	24	25
Wire end identification	Color of insulator	Yellow	Green	Green	Gray	Gray	White	White	Orange	Orange	Yellow	Yellow	Green
	Kind of markings	2-dot							3-dot				
	Color of marking	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black	Red	Black
Marked tube No.		14	15	16	17	18	19	20	21	22	23	Cut off	Cut off

Use the D00 type described above for 20 or more points.

3) Common terminal stand type (T10, 11)

(1) Caution with the common terminal stand type (T10, 11)

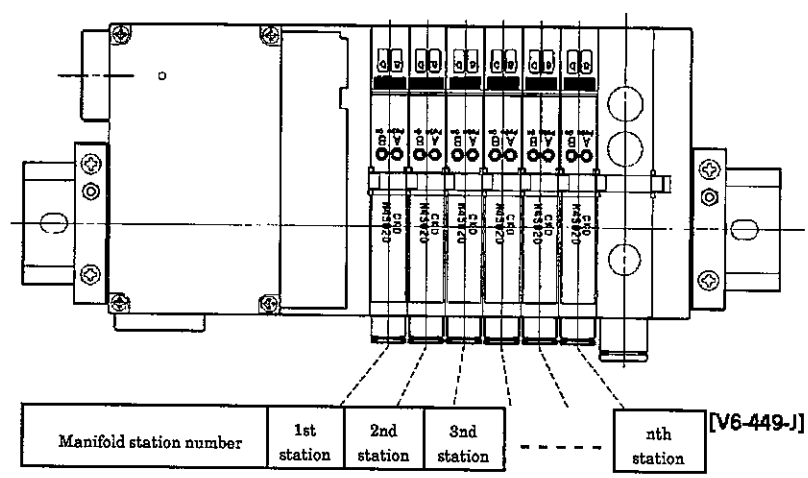
① Centralize the manifold power as the common wiring has been internally processed for the common terminal stand type. With an independent contact PLC output unit, carry out contact common wiring.

② Check the manifold stations and corresponding solenoids. Make sure that there is no error in wiring (see the table below).

③ The system is not functional if the number of solenoids exceeds 14 (T10) or 24 (T11).

④ Manifold stations are arranged one by one from left to right with the piping port in the front.

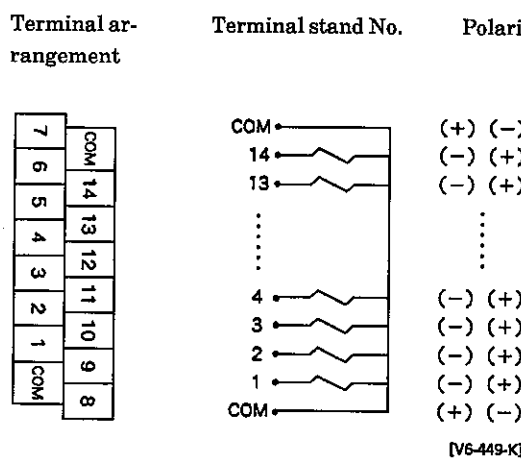
⑤ Voltage drops will occur depending on cable lengths or at the time of simultaneous power supply. Make sure that a voltage drop for the solenoid is within 10% of the rated voltage.



[V6-449-J]

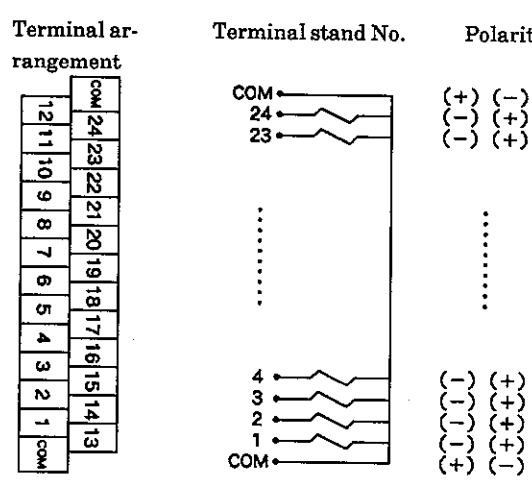
(2) Wiring method

T10 internal wiring (up to 14 solenoids)



[V6-449-K]

T11 internal wiring (up to 24 solenoids)



[V6-449-L]

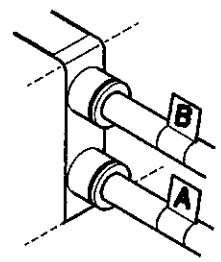
5. MAINTENANCE

5-1. Assembly and disassembly

1) Removal of the valve block

① Shut the power and air supply.

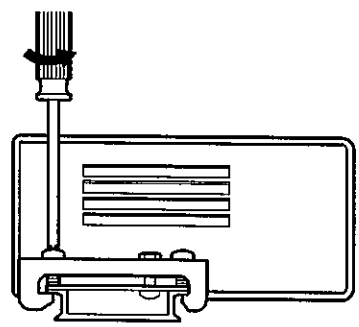
② Tag the pipe tubes of the valve block (hereinafter referred to as the reference valve) to be replaced so as to identify which one is for the A port and which one is for the B port.



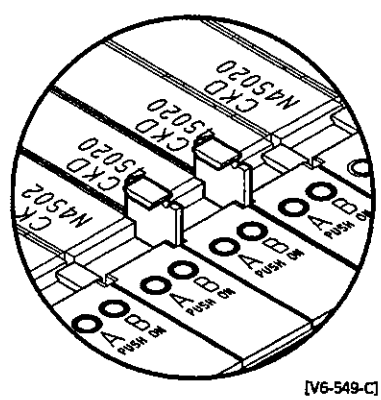
[V6-549-A]

! Make sure to carry out this tagging to prevent errors in piping.

③ Loosen the two screws of the end retainer on the end block side.


[V6-549-B]

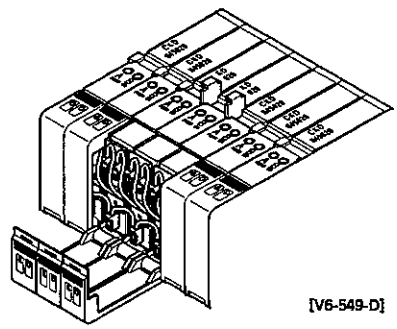
④ Pull up the right/left connecting keys of the reference valve.
(Recommended tool: precision flat-tip screwdriver, 3 mm or less in tip width)



[V6-549-C]

⑤ Open the cover of the reference valve and a cover on either side of the valve.

⑥ Check the mark tube numbers of the wires (black) connected to the reference valve and another valve on either side against the valve station numbers and the a/b distinction.


[V6-549-D]

(Reference)

Wiring No. Check table

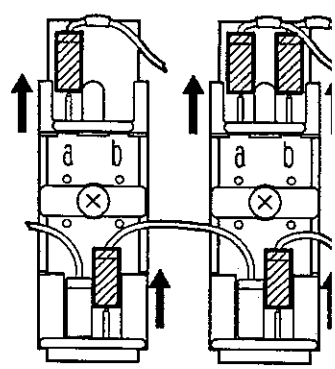
10		9		8		7		6		5		4		3		2		1		Station No.
a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	
																				Wiring No.

20		19		18		17		16		15		14		13		12		11		Station No.
a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	
																				Wiring No.

! Wrong wiring will cause the system to malfunction.

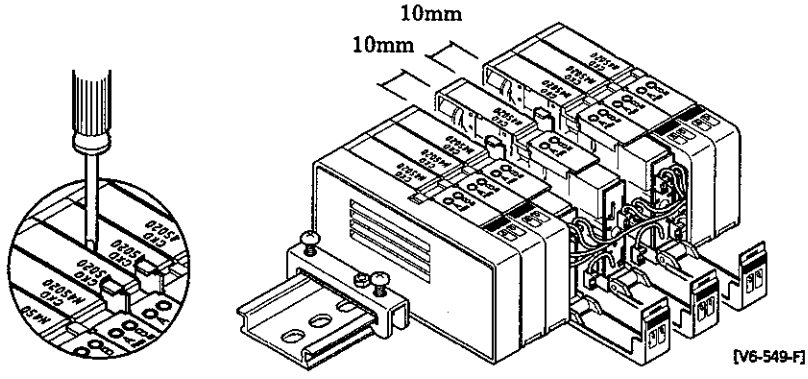
⑦ Remove the connector (black side) connected to the reference valve.

⑧ Remove the connector (red side) connected to the reference valve and the connector (red side) wired to the adjacent valve from the reference valve.



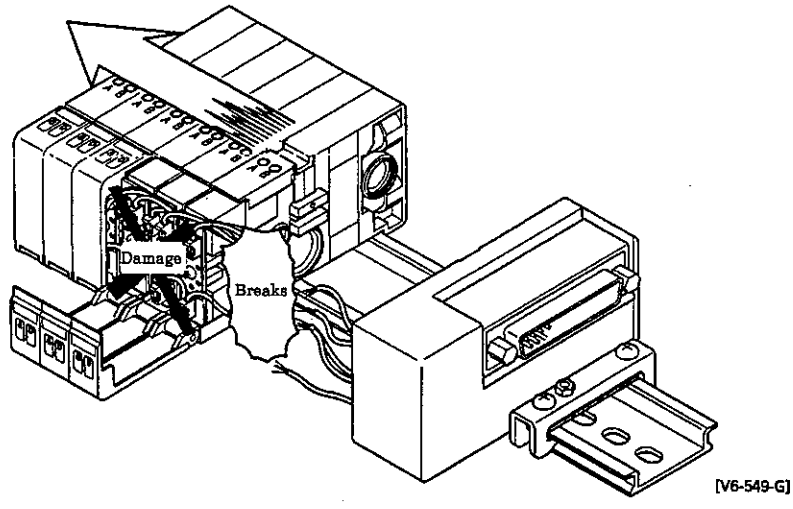
Adjacent valve Reference valve

⑨ Separate the reference valve.

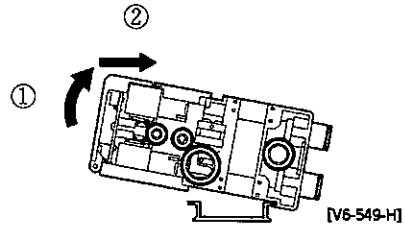


(The valve can be separated easily by wedging a precision flat-tip screwdriver, 3 mm or less at tip width, into the gap between the nameplates)

! Do not take the valves apart too much or too quickly as it may break the wire or damage the printed circuit board. Keep the distance between the valves within 10 mm.



⑩ Lift the reference valve a few millimeters on the cover side, slide it toward the joint and pull out the valve block.



2) Remounting the valve block

① Reverse the dismounting procedures. Place a new valve block on the DIN rail and assemble the whole manifold.

! Assemble the manifold after checking that the connecting keys are pulled up and that there is no biting of foreign objects or wires between the blocks.

② Push in the connecting keys.

③ Reconnect the wires.

! Check the wiring numbers to avoid errors.

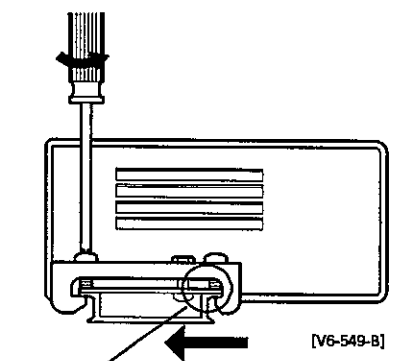
④ Close the covers.

! Be careful not to pinch the wires.

⑤ Slide the end retainer in the pipe direction until it stops and fasten it. (proper fastening torque: 1.4 N.m)

⑥ Reconnect the pipes.

! Make sure to distinguish between A port and B port connection.



Note Be sure not to leave any gap between the end retainer and the DIN rail.

3) Adding valve blocks (available only with the optional built-in cable)

⑦ The procedures are basically the same as the replacement. Use the built-in cable for wiring.

! It is recommended that an additional block be built next to the last block. If it should be added somewhere in the middle, make sure to maintain a correct matching between the wiring numbers and the station numbers.

4) Installation of the supply/exhaust block and the partition block

① Install these blocks in the same manner as in the valve block replacement.

② Thread the cable from the wiring block and the common cable inside the cover through the cover slit on the wiring side of the supply/exhaust block and the partition block.

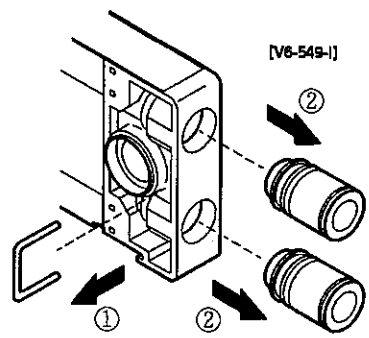
③ Make sure that the cable has enough length for additional blocks.

5) Cartridge joint replacement

① Separate the blocks in the same manner as in the valve block replacement.

② To replace the cartridge joint, use a flat-tip screwdriver to take out the stopper inserted into the block from the left side of the port.

③ Install a new joint. Make sure that the O-ring of the joint is free of dirt or other impurities.



6) Checking after disassembly and assembly Check the piping and wiring after the disassembly or assembly of the valve.

5-2. Regular inspection

1) Carry out regular checks once or twice a year in order to keep the electromagnetic valve in top condition.

2) Check the screws if they are loose and the sealing of the pipe joints.

3) Do not take apart the valve block unit as it may result in lost parts or other problems.

6. MANIFOLD MODEL DESCRIPTION

1) Block manifold

M (N)(4) S0 (1) 0 – (C4) – (M1)(T10) – ( ) – ( ) – (3)

Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ

Ⓘ FL No. for production after receiving of firm order

Ⓐ Model		Ⓑ Valve type	
Mark	Description	Mark	Description
N	DIN rail mount	3	3-port valve
T	Direct mount (limited to valve block 8 stations)	4	4-port valve 3/4-port mixed valve

Ⓒ Switching position classification		
	Mark	Description
4-port valve	1	2-position single
	2	2-position double
	3	3-position all port block
	4	3-position ABR connection
	5	3-position PAB connection
3-port valve	1	2-position normal close single
	11	2-position normal open single
	8	Mixed manifold

Ⓓ Port size (cylinder port)	
Mark	Model
C4	Push-in joint, sideways ϕ4
C6	Push-in joint, sideways ϕ6
CL4	Push-in joint, upwards ϕ4
CL6	Push-in joint, upwards ϕ8
CX	Mixed Push-in joint, upwards
M5	M5 internal thread

Ⓔ Manual override		
Mark	Model	
No mark	Non-locking manual override	Standard
M1	Lock-type manual override (toolrequired)	option
M2	Non - locking 凸 type	custom order
M3	Lock-type 凸 type	
MX	Mixed manual overricle	

If AB port filter needs to be mounted (prevention of foreign matter entry) (option), "F" is put after the mark.

Ⓕ Wiring method			
Mark	Model	Mark	Model
T10	Common terminal stand (14P : M3 screw type) (left side model)	T10R	Common terminal stand (14P : M3 screw type) (right side model)
T11	Common terminal stand (24P : push-fastening type) (left side model)	T11R	Common terminal stand (24P : push-fastening type) (right side model)
T30	D sub-connector (25P) (left side model)	T30R	D sub-connector (25P) (right side model)
T50	Flat cable connector (20 P) (left side model)	T50R	Flat cable connector (20 P) (right side model)
T621	Serial transmission (Omron : SYSBUS wire system and multi-link16points))	T6E0	Serial transmission(SUNX: S-LINK 8 points)
		T6E1	Serial transmission(SUNX: S-LINK 16 points)
T631	Serial transmission(Mitsubishi Electric Corporation : MELSEC NET/MINI-3 data link system16 points)	T6G1	Serial transmissionMitsubishi Electric Corporation : CC-Link 16 P)
T6A0	Serial transmission (Uniwire system 8points)	T6J0	Serial transmission (UniwireHsystem 8 points)
T6A1	Serial transmission (Uniwire system 16 points))	T6J1	Serial transmission (UniwireHsystem16 points)
T6C0	Serial transmission (Omron: CompoBus/S 8 points))	T6K1	Serial transmission (Keyence : KZ-R 16 points)
T6C1	Serial transmission (Omron: CompoBus/S 16 points)	C	Individual connector Lead wire length : 300mm
		C0	Individual connector Lead wire length : 500mm
		C1	Individual connector Lead wire length : 1000mm
		C2	Individual connector Lead wire length : 2000mm

※ For details of serial transmission, see relevant instruction manual.

⑥ No. of manifold electro-magnetic valve stations		⑦ Voltage		
Mark	Model	Mark	Model	
2	2 stations	3	DC24V	Standard
⟆	⟆	4	DC12V	
	Maximum number of			
8	stations for each wiring			

2) Valve block unit

N (4) S0 (1) 0 – (C4) – (M1) (C) – (3)
Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ

Ⓐ Valve type	
Mark	Description
3	3-port valve
4	4-port valve

Ⓑ Switching position classification		
	Mark	Description
4-port valve	1	2-position single
	2	2-position double
	3	3-position all port block
	4	3-position ABR connection
	5	3-position PAB connection
3-port valve	1	2-position normal close single
	11	2-position normal open single

Ⓒ Port size	
Mark	Description
C4	Push-in joint, sideways, ϕ4
C6	Push-in joint, sideways, ϕ6
CL4	Push-in joint, upwards, ϕ4
CL6	Push-in joint, upwards, ϕ8
M5	M5 internal thread

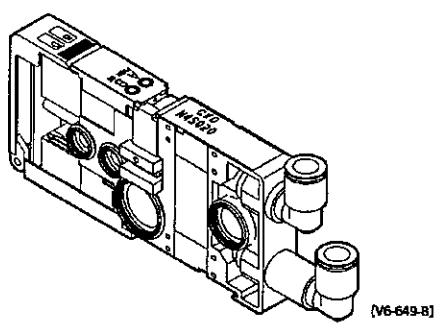
If AB port filter needs to be mounted (prevention of foreign matter entry) (option), "F" is put after the mark.

Ⓓ Manual override		
Mark	Model	
No mark	Non-locking manual override	Standard
M1	Lock-type manual override (tool required)	option
M2	Non - locking 凸 type	custom order
M3	Lock-type 凸 type	

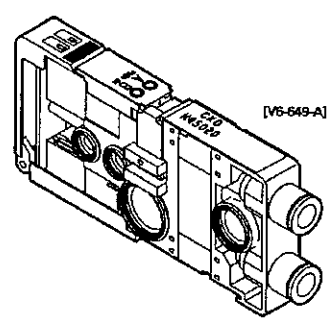
Ⓕ Voltage		
Mark	Description	
3	DC24V	Standard
4	DC12V	

Ⓔ Lead wire length		
Mark	Model	
No mark	leduced wiring	Standard
C	Individual connector lead wire length :300mm	option
C0	Individual connector lead wire length :500mm	
C1	Individual connector lead wire length :1000mm	
C2	Individual connector lead wire length :2000mm	

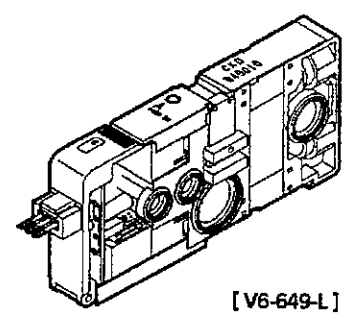
Push-in joint , upword



Push-in ,joint , sideway



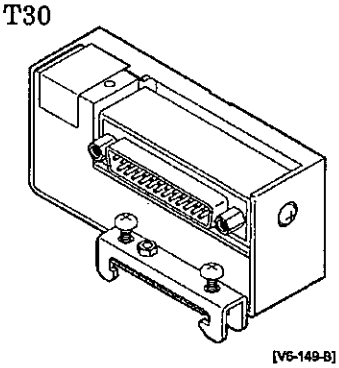
Individual connector



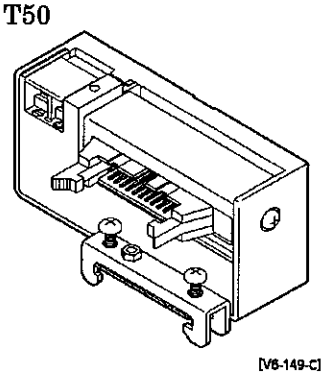
3) Wiring block unit

D sub-connector	Flat cable connector	Common terminal stand
N4S0-T30 : left side model	**N4S0-T50** : left side model	**N4S0-T10** : left side model
T30R : right side model	**T50R** : right side model	**T10R** : right side model

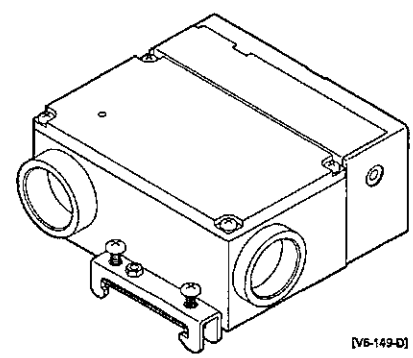
T30



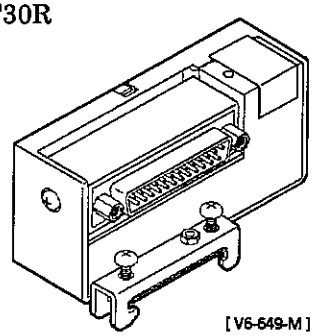
T50



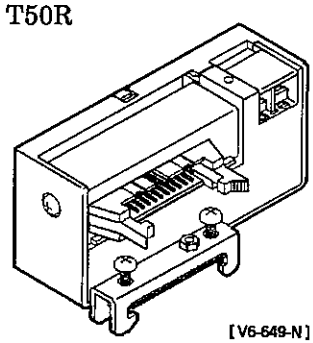
T10



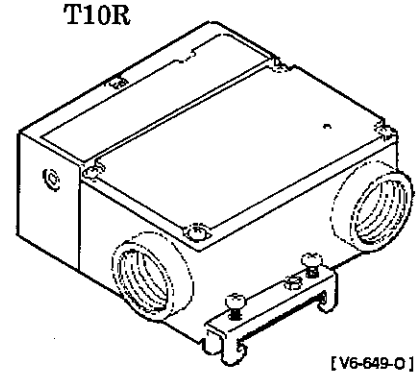
T30R



T50R



T10R



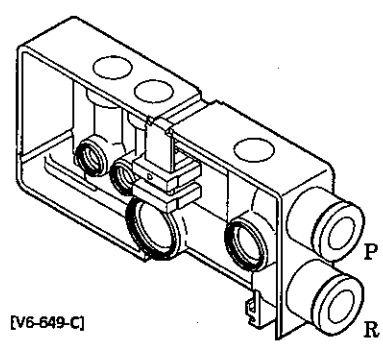
4) Supply/exhaust block unit

N4S0 –(Q)– 8

Mark		P port	PA port	R port	PR port	Pipe direction	Design
Q-	8(X) 8L(X)	φ8 Push-in joint		φ8 Push-in joint (plug)		Sideways Upwards	Internal pilot type
QK-	8(X) 8L(X)	φ8 Push-in joint	φ6 Push-in joint	Centralized φ8 joint (plug)		Sideways Upwards	External pilot type
QZ-	8(X) 8L(X)	φ8 Push-in joint	—	φ6 Push-in joint (plug)	—	Sideways Upwards	For different-pressure circuital pilot type

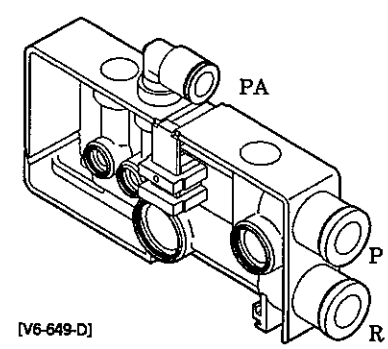
- For the atmosphere release type, the air is exhausted from the end block. In this case, if the R port with the plug attached is required, "X" is put next to the model No
- Models with P and R ports having a piping port size of (6 or 4/4 ((6.4) are manufactured after receiving of the firm order. The model No. for a port size of (6 is N4S0-Q-6 and that for 1/4 is N4S0-Q-6.4.
- The model QZ must be used with it combined with the model Q or QK. The model QZ cannot be used solely.
- To prevent foreign matter from entering, a filter is built-into the P port. (Standard specification)

Q-8
QZ-8



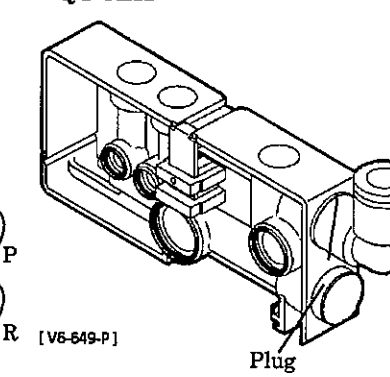
[V6-649-C]

QK-8



[V6-649-D]

Q-8LX
QZ-8LX



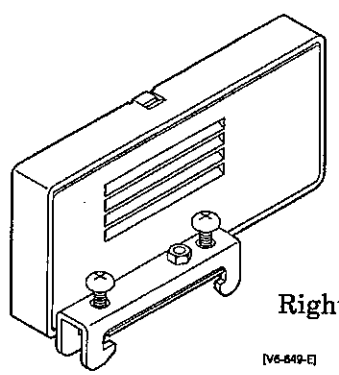
[V6-649-P]

5) End block unit

N4S0 – (E)

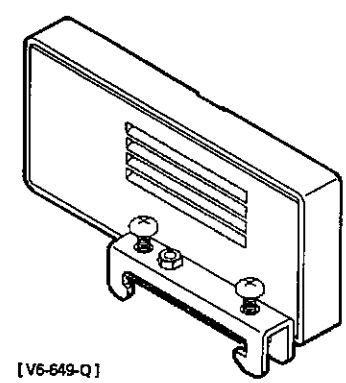
Mark	Description
E	Right-side end block
EX	End block with a built-in exhaust muffler (right side model)
EL	left-side end block
ELX	End block with a built-in exhaust muffler (left side model)

The R port of the supply/exhaust block of the manifold for the EX comes with a plug cartridge instead of a push-in joint.



Right side model

[V6-649-E]



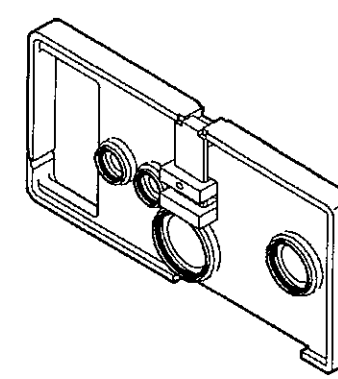
[V6-649-Q]

Left side model

6) Partition block unit

N4S0 – (S)

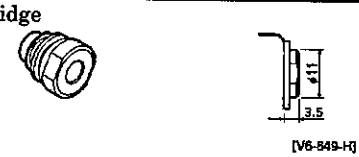
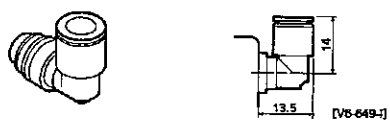
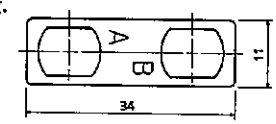
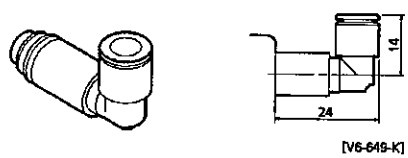
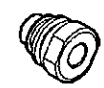
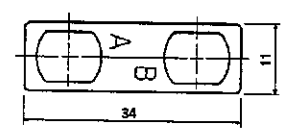
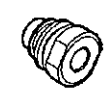
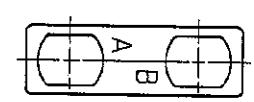
Mark	Description
S	P. R stop and PA, PR through
SP	P stop and R, PA, PR through
SE	R stop and P, PA, PR through
SA	P, R, PA, PR all stop



[V6-649-F]

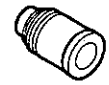
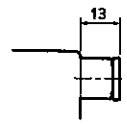
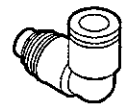
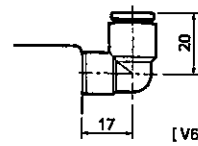
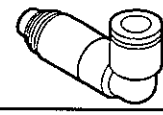
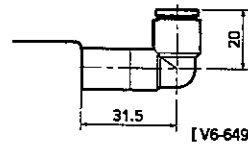
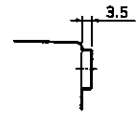
7) Push-in cartridge joint unit

N 4 S 0 – (C4)

Mark	Description	Mark	Description
C4 C6	Push-in cartridge joint for the ϕ4 tube  Push-in cartridge joint for the ϕ6 tube	CM5	M5 cartridge  Use this cartridge together with the CMP.
CL4 CL6	Push-in cartridge joint for the short-L ϕ4 and ϕ6 tube 	CMG	Plate for preventing the M5 cartridge from turning. 
CLL4 CLL6	Push-in cartridge joint for the long-L ϕ4 and ϕ6 tube 	4-port, M5 kit	M5 cartridge (×2)  Plate for preventing the M5 cartride form turning (×1) 
CPG	Plug cartridge 	3-port, M5 kit	M5 cartridge (×2)  Plug cartridge for the M5 cartridge (×1) 
CMB	Plug cartridge for the M5 cartridge 		Plate for preventing the M5 cartride form turning (×1) 

8) Push - in cartridge joint for the supply / exhaust block

N 4 S 0 – Qjoint – (8)

Mark	Description	
8	Push-in cartridge joint for the ϕ8 tubu	  [V6-649-R]
6	Push-in cartridge joint for the ϕ6 tubu	
8L	Push-in cartridge joint for the short - L ϕ8	  [V6-649-S]
6L	Push-in cartridge joint for the short - L ϕ6	
8LL	Push-in cartridge joint for the long - L ϕ8	  [V6-649-T]
6LL	Push-in cartridge joint for the long - L ϕ6	
MP	Port plug	  [V6-649-U]

For pilot compressed air supply, see the joints for valve block stated on the previous page.