CKD

SM-3342-A

INSTRUCTION MANUAL

MICROSOL, BLOCK MANIFOLD

N□P51

- 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

- 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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Microsol, Block Manifold
Manual No. SM-3342-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.

Jul.22.1989
Revision. : Jul.7.2000

1. PRODUCT

1.1 Specification of Block Manifold

Item		Specification	
Type of manifold		Manifold block type (DIN Rail mounting)	
Applicable solenoid valve		Microsol P5122, P5126, P5132, P5136, P5142	
Applicable solenoid valve		Up to 25 blocks	
Wire connecting method		Grommet lead wire, small terminal box, connector	
piping method		Common SUP (P), Common EXH (R)	
Type of connecting pipes		SUP (P), EXH (R)	CYL (A · B)
		Top (w/one touch coupler 6 × 4 tube) Side(w/one touch coupler 6 × 4 tube)	Top (w/one touch coupler 4 ×2.5 tube) Side(w/one touch coupler 4 ×2.5 tube)
Tube to be used		Super-flex (F-1500)···Soft nylon U-flex (U-9500)···Urethane	
Ambient temperature	°C	−10 to 40 (Not frozen)	
Max. working pressure	MPa	0.99	
Proof pressure	MPa	1.5	

1.2 Specification of Microsol

No. of port / Item		2 or 3-way valve	4-way port valve
Orifice size	mm²	φ1.2, φ1.6	φ1.2
Media		Compressed air, low range vacuum, inert gas	
Ambient temperature	°C	−10 to 50 (Not frozen)	
Working pressure range	MPa	φ1.2 : 0.1 to 0.99 φ1.6 : 0.1 to 0.6	0.15 to 0.7
Proof pressure	MPa	1.5	
Effective sectional area	mm²	P → B : 0.62(φ12), 0.76(φ1.6), B → R: 0.84	P → A, B : 0.45, A · B → R1, R2 : 0.55
Lubrication		Not required (Recommended turbine oil class 1, ISO VG32, if lubrication preferred.)	
Operating method		Popet	
Manual override		Upward, side ward (Pushing style)	Upward non-lock style (Pushing style)

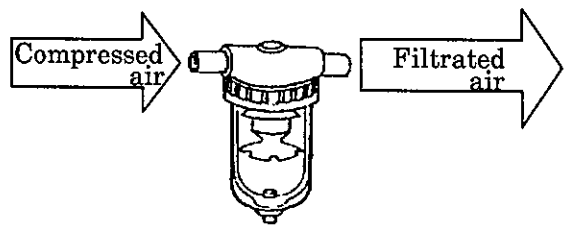
1.3 Electric specification of Microsol

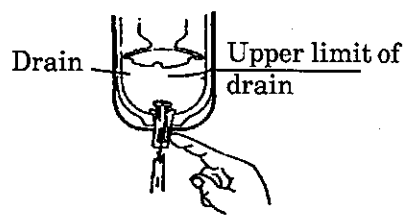
Rated voltage (V) / Item		AC100V (50/60Hz)	AC200V (50/60Hz)	DC12V	DC24V
Inrush current	(A)	0.056/0.044	0.028/0.022	0.15	0.075
Holding current	(A)	0.028/0.022	0.014/0.011		
Power consumption	(W)	1.8/1.4	1.8/1.4	1.8	1.8
Voltage fluctuation range		±10%			
Insulation class		Class B, molded coil			
Temperature rise		45°C			

Each model AC100V and AC200V(50/60Hz) is serviceable with the current of AC100V and 200v(60Hz) respectively.

2. CAUTION

2.1 Fluid





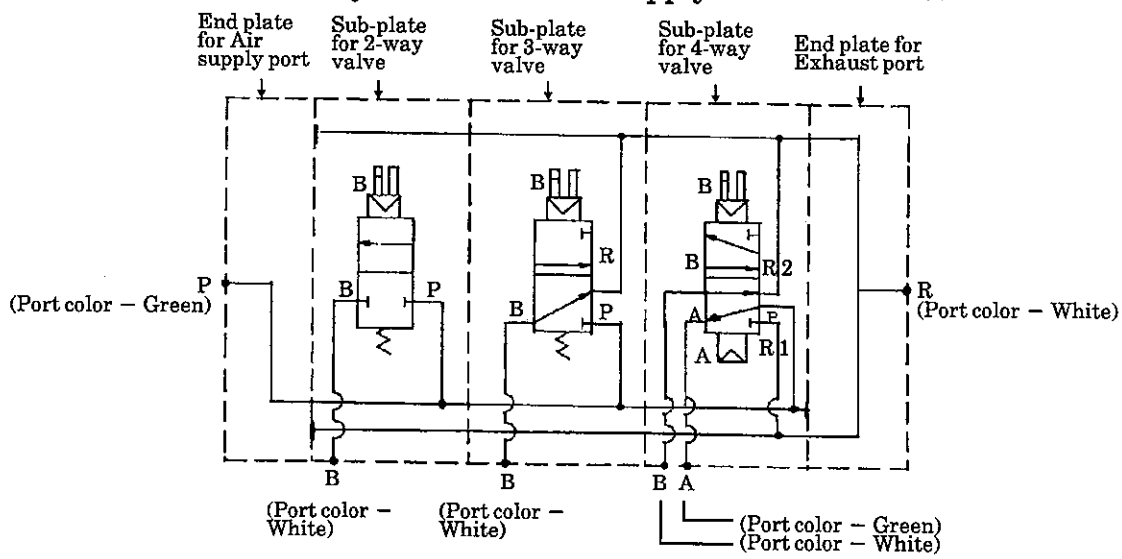
1) Use the compressed air, filtrated and dehumidified. Carefully select a filter of an adequate filtration rate (5μm or lower preferred), flow rate and its mounting location (as closest to directional control valve as possible).
2) Be sure to drain out the accumulation in filter periodically.
3) Note that the intrusion of carbide of compressor oil (such as carbon or tarry substance) into the circuit causes malfunction of solenoid valve and cylinder. Be sure to carry out thorough inspection and maintenance of compressor.
4) This solenoid valve does not require lubrication. It is recommended, however, to use Turbine oil Grade 1, ISO VG32, if lubrication is preferred.
5) Refer the following procedures as for improving measure of the quality of compreccssed air.
   a. Dehumidifying the air by means of after-cooler drier
   b. Removal foreign particles and material by means of filter
   c. Removal tarcarbide by means of tar-removing filter

3. OPERATION

3.1 Function

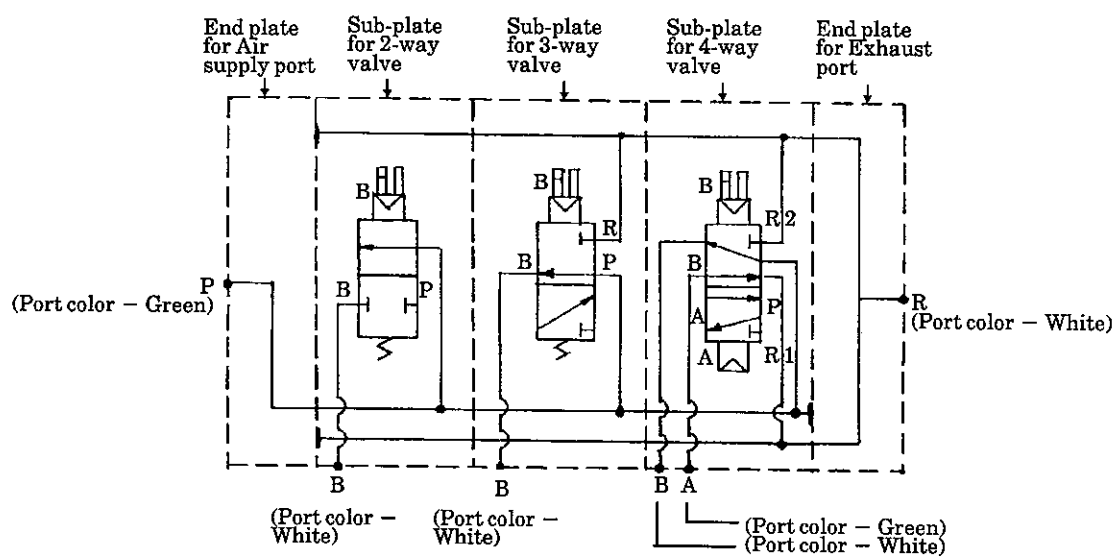
1) Off-current to solenoid

Air passage : 2-way valve All ports blocked
3-way valve B→R exhaust
4-way valve P→A air supply : B→R exhaust



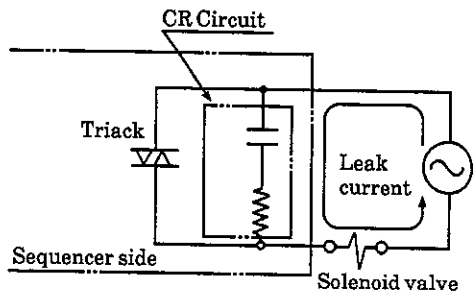
2) On-current to solenoid

Air passage : 2-way valve P→B Air supply
3-way valve P→B Air supply
4-way valve P→B Air supply : A→R exhaust



3.2 Limitation of leak current

Be extremely careful that it apt to give some wrong effect due to the leaking current through the CR element, when attempt to make use the sequencer which is protecting switching elements by absorbing serge voltage in a CR circuit.



Regulate the residual leaking current within the following limitations;

AC 200V	Less than	1.5 mA
AC 100V	Less than	3 mA
DC	Less than	1.8 mA

4. INSTALLATION

4.1 Piping

1) Tubes

One touch joints are provided to supply port end-plate, exhaust port end-plate and solenoid valve sub-plate. The use of the following tubes are recommended.

- Tubes for air supply and exhaust
  - Soft nylon tube F-1506 (ø6 × ø4)
  - Urethane tube U-9506 (ø6 × ø4)
- Tubes for solenoid valve
  - Soft nylon tube F-1504 (ø4 × ø2.5)
  - Urethane tube U-9506 (ø4 × ø2)

2) Insertion of tube

Insert the tube to the deepest point of the one touch joint.

4.2 Ambient condition

Provide a protection to the solenoid valve such as a cover or installation the valve inside of enclosed panel where water drops directly hit it.

4.3 Mounting configuration

There is no specific limitation. But remember that the flat mounting or horizontal mounting is the ideal configuration. Avoid installing valve where vibration is 5G or more.

4.4 Countermeasure of dust control

Where much dusts are expected or foreseen, provide protection to the valve such a measure as installing silenser or elbow type joint to EXH port holding its open end downward to keep the dust from falling into an open port.

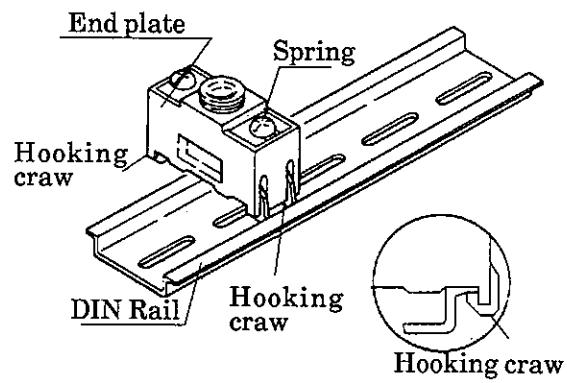
5. MAINTENANCE

5.1 Periodic Inspection

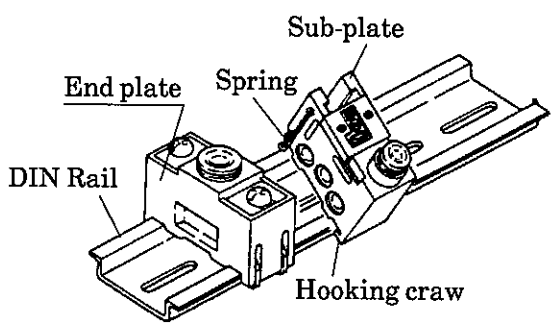
1) In order to upkeep the solenoid valve in optimum condition, carry out periodic inspection once or twice a year.
2) Check the threaded portion for slackening, accumulation of foreign particles on the filter at the end plate or accumulation of drain in the drain bowl.
3) Tighten slackening threaded portion and/or blow out dust or drain when some unusual condition is found through an inspection.

5.2 Assembling

1) Fix a DIN rail.
2) Affix an end plate on the rail.
   While holding an end plate up right, press it down on the rail to have the crows on both sides of plate hook onto the rail as per illustrated and tentatively tighten the screws. (Tighten them up after mounting sub-plates.)



3) Hook as many numbers of sub-plates onto the rail as required and integrate them sliding on the rail toward the end plate allowing no gap between plates.

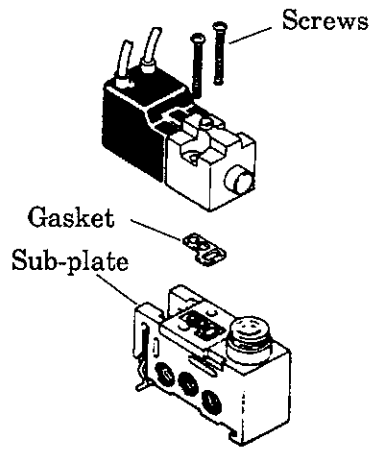


NOTE : Microsol itself is mounted on a sub-plate.

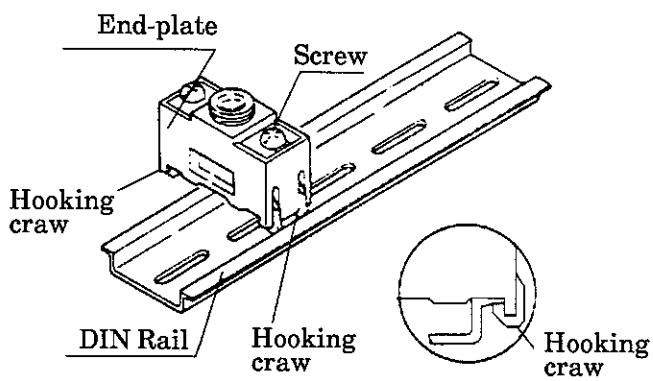
4) Hook the last end plate onto the rail and tighten the screw.

5.3 Disassembling

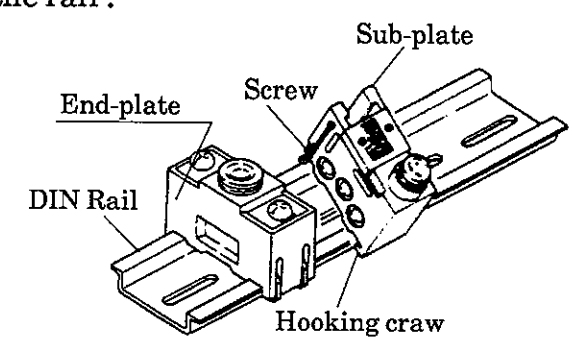
1) Removal of microsol
   (1) Unscrew two mounting screws.
   (2) Remove the microsol off the sub-plate. Save the gasket.



2) Removal of end-plate
   (1) Slide the end-plate on the rail for approx. 3 mm after loosening mounting screws for about 2 ~ 3 turns.
   (2) Remove the end-plate off the rail after ply opening hooking craws.



3) Removal of sub-plates
   (1) At first, slide the end-plate for approx. 6 mm after loosening its mounting screws for about 2 ~ 3 turns to provide ample space to make the being removed sub-plate slide.
   (2) After sliding for approx. 3 mm, remove the sub-plate from its spring side off the rail .



5.4 Mounting rail

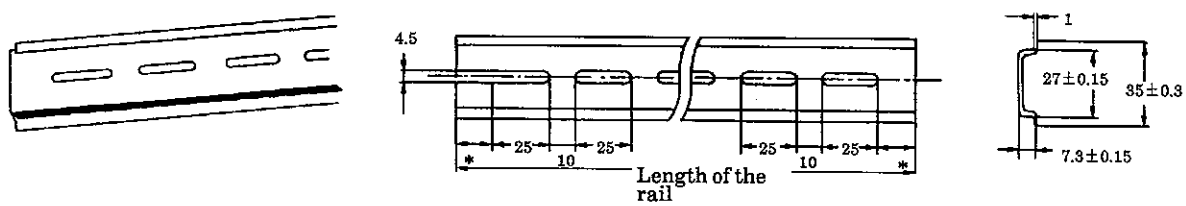
The following DIN rails are available in the market.

1) Tateishi Denki Co. (Supporting rail)

Model No.	Length	Height
PFP-100N	1000mm	7.3mm
PFP-50N	500mm	7.3mm

External dimensions

● Model PFP-100N, Model PFP-50N



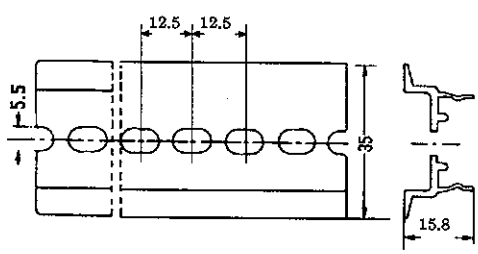
※Both end 15: Model PFP-100N
On end 15 while the other end 5: Model PFP-50N

2) Izumi Denki Co. (DIN series Rail)

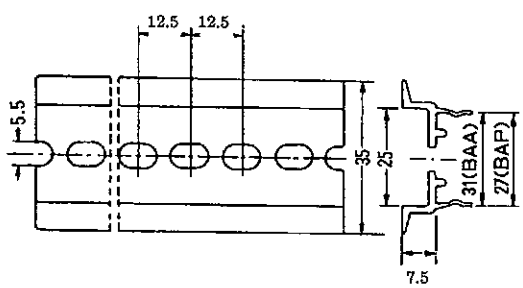
Model No.		Material	Length
BADA	BAD500	Aluminum	500mm
	BAD1000		1000mm
BAA	BAA500	Aluminum	500mm
	BAA1000		1000mm
BAP	BAP500	Steel plate	500mm
	BAP1000		1000mm

External dimensions

● Model BADA



● Model BAA and BAP



● Related Catalogs
Microsol (Cat. No. CC-N-89)
Tubes and plugs (Cat. No. CC-N-87)

6. MODEL CODING

1) Microsol itself for Block manifold

N51 (a) (b)–(c) (d) (e) (f)–(g)–(h)–(i)

ⓐSolenoid valve		ⓑOrifice		ⓒLocation of manual control	
2	2-way valve	2	ϕ1.2	M0	Side way, Non-lock (Standard)
3	3-way valve	6	ϕ1.6	M1	Side way, Lock (Optional)
4	4-way valve	Note : 4-way valve is not available for 6 (ϕ1.6)		M6	Upper, Non-lock (Standard)
				N	No. manual control(Optional)

Note : Models M0 and M1 are not available for 4-way valve

ⓓCoil option			ⓔClass of pressure		ⓕDirection of coil	
B	Small terminal box (PE1/4)	Standard	No code	Standard	No code	Parallel to
E	Grommet lead wire		V	Low pressure, Lo Vacuum	R	mounting screws Toward sub-plate
C	Connector lead wire (L : 300mm)					
C1	Without connector lead wire	Optional				
C2	Connector lead wire (L: 300mm) Lamp serge killer					
C3	Without connector lead wire, with lamp serge killer					
L	Lead wire with a lamp (L : 300mm)					
P	Small terminal box (PF 1/4), Built-in serge killer coil					
Q	Grommet lead wire, Built-in serge killer coil					

ⓖTubing		ⓗSerge killer		ⓘVoltage
UH4	Upper tubing, one touch joint ϕ4	No code	Without	AC100V
SH4	Side tubing, one touch joint ϕ4	S	With suppression connector (DC only)	AC200V
				DC12V
				DC24V

● Coding Example

N5132M6B-UH4-AC100V

It is a Microsol itself for block manifold, 3-way valve, Orifice ϕ1.2mm, Upper Non-lock, Small terminal box, Upper tubing one touch joint ϕ4, AC100V.

2) Block single

(a) (b) (H) (c)

Type of connection : One touch joint

● Coding Example

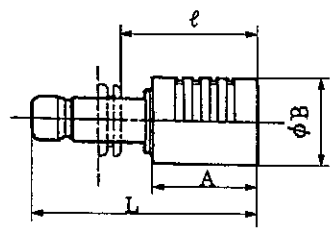
PLUH4

End-plate for left side supply port, upper tubing, one touch joint, Applicable tube 4×2.5

ⓐType of block		ⓑDirection of tubing		ⓒAppplicable tube	
PL	End-plate for left side supply port	U	Upper tubing	4	4×2.5 (Exclusive use for M3 & M4 in column ⓐ left)
RR	End-plate for right side exhaust port	S	Side way tubing	6	6×4 (Exclusive use for supply and exhause plates in column ⓐ left)
M3	Sub-plate for 3-way valve				
M4	Sub-plate for 4-way valve				
PR	End-plate for right side supply port				
RL	End-plate for left side exhaust port				
PM	Intermediate-plate for supply port				
RM	Intermediate-plate for exhaust port				

3) Silenser

Model No.	Connectingjoint dia. ϕ	L	ℓ	A	B
SLW-H6	6	41	25	20	16
SLW-H8	8	42	25	20	16



4) Soft nylon tube model coding

F-15 ⓐ

Soft nylon tube

ⓐApplicable tube OD	
04	ϕ4
06	ϕ6
08	ϕ8

5) Urethane tube model coding

U-95 ⓐ

Urethane tube

ⓐApplicable tube OD	
04	ϕ4
06	ϕ6
08	ϕ8

6) Plug

Model No.	Connecting joint ID ϕ	L	ℓ	d
GSP4-B	4	27	12	6
GSP6-B	6	29	12.5	8
GSP8-B	8	33	15.5	10