CKD F3-453367-A 2020.09.01

Handling Instructions

MN3E·MN4E-T7* series

Thank you for purchasing CKD product.
Please review the precautions in this instructions thoroughly for safe operation of this equipment.
Keep this document in a safe location so that it is easily referenced as necessary.
For further information, refer to the instruction manual and product catalog.

CAUTION!! Do not unpack solenoid valve until the piping is ready for connection.

Foreign materials entering through piping port will cause failure and malfunction.

⚠ WARNING

- Do not step on or place objects on the product. Failure to follow this warning may cause falling accident, falling of the product, bodily injury due to fall, malfunction due to breakage of the product, etc.
- Before inspecting, checking or adjusting the product, turn off power supply and shut down compressed air line and verify zero residual pressure.

Piping and installation

⚠ WARNING

- Do not use water or solvent for cleaning and painting. Plastics broken by the solvent and coating materials will clog the port, causing malfunction.
- Check the location of piping port by referring to product indication, etc. Wrong piping will cause malfunctioning of actuator.
- Screws used to fasten pipe joints must be tightened with a correct torque. Otherwise, air will leak or screws will be damaged.

Tightening torque

Connecting screw	Tightening torque N·m	Connecting screw	Tightening torque N·m
M3	0.3～0.6	Rc3/8	13～15
M5	1～1.5	Rc1/2	16～18
Rc1/8	3～5	Rc3/4	19～40
Rc1/4	6～8	Rc 1	41～70

⚠ CAUTION

- **Do not throttle the supply port.** Otherwise, supply pressure drops during operation and causes the device to malfunction.

- Before connecting the piping to the valve, thoroughly clean the inside of piping by air blowing (flushing) or by washing to clear off chips, cutting lubricant, dust and foreign objects,.
- Do not mount the solenoid valve by supporting it with piping. Secure the valve with dedicated supporting member.
- When wrapping a seal tape, start wrapping 2 mm from the tip of the screw, in the direction of thread. If the tape protrudes from the screw section, it will be cut as the piping is screwed, leaving shreds inside valve. These chips or shreds will result in failure.
- Prevent entrainment of foreign materials from exhaust port by facing down the port or by using a silencer.

Lubrication

⚠ CAUTION

- This product is basically a pre-lubricated type, requiring no lubrication. However, when lubrication is needed, it can accept class 1 turbine oil (additive-free), ISO VG32. Remember that once the oil is applied to the product, continuous application is required. Loss of oil means loss of lubricant, causing malfunction.

Self-return

- Operator positions of valve block include self-return. Self-return is performed either by "differential pressure return" or "differential pressure spring return".
- Both "differential pressure return" and "differential pressure spring return" arrangements allow the main valve to return to origin (self-return), but behave differently to each other when ON state with 0 supply pressure.
  - "Differential pressure return" type holds the current position.
  - "Differential pressure spring return" type returns back to origin by the aid of spring.

Choose the return type according to the interlock specification of the device to be used.

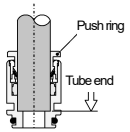
State of main valve - holding/returning

Type of valve			Main pressure drops @ON	Main pressure	Power OFF @ON
N3E0 N3E00	1/11	3-port valve single NC-NO Self-return (differential pressure spring return)	Shift OFF (origin)	Shift ON	Shift OFF (origin)
	2/21	3-port valve double NC-NO Self-holding	Hold ON position		Hold ON position
	66・67・76・77	2 x internal 3-port valves NC-NO self-return (differential pressure return)	Hold ON position		Shift OFF (origin)
	66S・67S・76S・77S	2 x internal 3-port valves NC-NO self-return (differential pressure spring return)	Shift OFF (origin)	Shift ON	Shift OFF (origin)
N4E0 N4E00	1	4-port valve 2-position single self-return (differential pressure spring return)	Shift OFF (origin)	Shift ON	Shift OFF (origin)
	2	4-port valve 2-position double self-holding	Hold ON position		Hold ON position
N4E0	3・4・5	4-port valve 3-position	Shift OFF (origin)	Shift ON	Shift OFF (origin)

Joint and tube

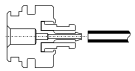
Push-in joint

- Insert the tube to the tube end. Verify positive engagement of the tube by jiggling it with approx. 20N. If the tube is not fully inserted, it may become loose, causing air leakage.

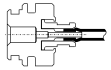


Operation of joint for Air Fiber (CF)

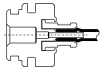
① Place the collar in innermost position.



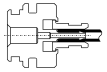
② Cut the tip of Air Fiber at a right angle.



③ Check that Air Fiber is inserted through the collar.



④ Insert Air Fiber to the bottom.



⑤ Pull the collar to lock.

Tube

- When cutting the tube, use the dedicated cutter which enables right-angle cutting.
- The bending angle of piping must be larger than the minimum bend radius of the tube.

Manual override

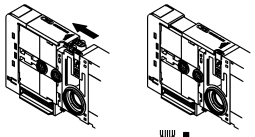
⚠ WARNING

- Be sure the area near the operating cylinder is cleared of all unauthorized personnel before working.
- Release the lock before starting normal operation to prevent false operation.

- The 4E series is a pilot operated solenoid valve. If air is not supplied to P port (PA port for external pilot), the main valve will not switch over even if manual override is activated.
- Manual protection cover is provided as standard accessory. The unit is delivered with the cover closed. Before operating the manual override, open the protection cover.
  Note: The protection cover cannot be closed until the locked manual mechanism is released.
- Non-locked and locked types commonly use manual override. It is designed to be locked when rotated while being pushed. Never rotate it without pushing it. Otherwise, damage to the override or air leakage may occur.

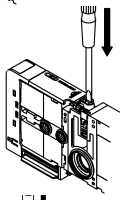
Opening/closing manual protection cover

- When opening/closing the cover, do not apply an excessive force (i.e. 5N or more) which will cause malfunction.

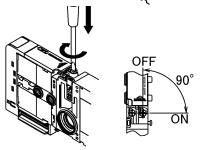


Operating manual override

- Push to unlock
  Push the member in the direction of arrow to the bottom.
  Removing the pushing force releases the manual override.



- Push to lock
  Push the member in the direction of arrow to the bottom, and then rotate it clockwise 90 degrees.
  Removing the pushing force will not release the manual override.



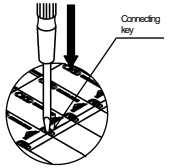
Disassembling/Assembling manifold

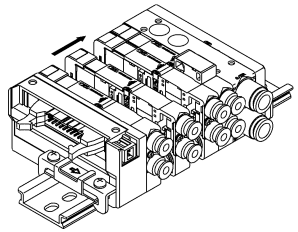
⚠ WARNING

- When adding/removing manifold, be sure to turn off power supply and release pressure from the system.
- Be sure to join the blocks. Tighten the screws with appropriate torque. Inappropriate assembling or tightening may cause air leakage, falling product, damaged screws, deformed DIN rail, etc.

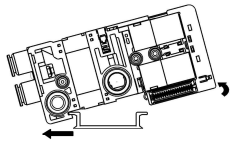
Disassembling

- Loosen DIN rail fixing screws on end block side.
- **Using a needle-nosed tool, press and hold the connecting key** for the valve block to be replaced and the blocks on both sides.
- **While pressing and holding the connecting key,** slide the block toward the end block to provide approx. 10 mm clearance on both sides of the block to be replaced.



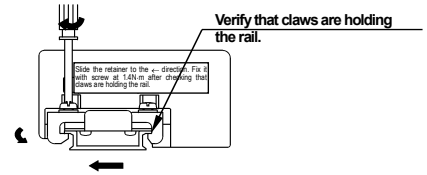


- Raise the block on electric cover side and pull it toward the piping port to remove it from DIN rail.



Assembling

- Slide all blocks toward the electric block and **connect them so that no gap is found between blocks.** Verify that the connector is pinch-free. Adding excessive force to incorrectly engaged connector causes damage.
- Verify that the connecting key is returned to the groove on the block upper surface.
- **Slide the retainer of end block toward port until the claws catch the DIN rail** and tighten the fixing screws after checking that claws are holding the rail. Appropriate screw torque is 1.4 N·m.

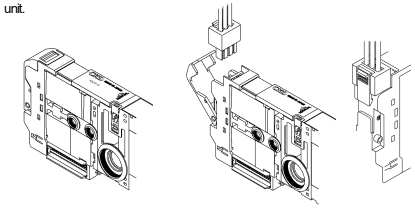


(Option) AUX with individual ON/OFF power input

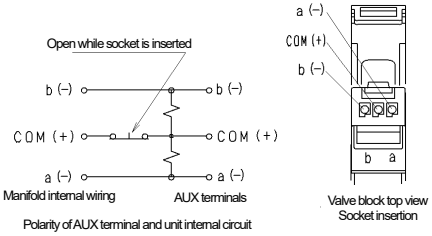
AUX having power inlet for individual ON/OFF feature enables operation of any valve in the reduced wiring manifold, by using a separate power source. This feature is useful when adjusting the device.

Connecting to individual power source

Open the electric cover. Connect the power input socket (N4E0 socket assembly S/D) to the unit.



When the power input socket is engaged, valve internal wiring is temporarily disconnected from the reduced wiring on the manifold, enabling external power supply.



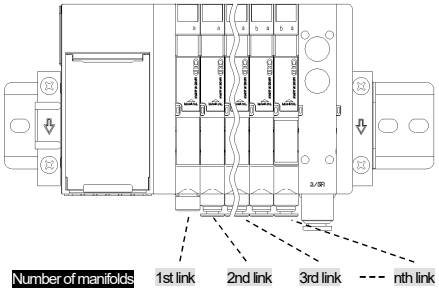
Precautions for use of AUX

Reduced wiring side and individual power input side operate on **plus common** system. Verify the polarity of wiring before making connection.

Reduced wiring side and individual power input side must be connected to independent power source. If they share the same power source, the reduced wiring cannot be separated resulting in malfunction.

Serial transmission type: wiring system T7*

- Serial transmission unit block output number varies from PLC manufacture to PLC manufacturer but assignment of functions is common to all manufacturers. The output numbers and corresponding manifold solenoids are as shown in the table below.
- The manifold link number is assigned in ascending order starting from the leftmost one when viewed from the piping port.
- Since internal connectors are wired in sequence, if the number of solenoids is less than that of outputs, some output numbers are not used. However, these unused outputs cannot be used to drive a device other than the solenoid valve manifolds to be used. 24 VDC supply is used.
- Use the serial transmission unit block specific to the communication system to be used. For applicable PLC type, model number of parent station, and communication system specification, contact us.



Output No. and corresponding valve No. (example)

* Valve Nos, 1a, 1b, 2a, 2b, etc., represent 1st link, 2nd link, etc., and letter a and b indicate a side solenoid and b side solenoid, respectively. The maximum link of manifolds depends on the model. See model specifications.

Single solenoid valves only

<Standard wiring>

Output No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Valve No.	1a	2a	3a	4a	5a	6a	7a	8a	9a	10a	11a	12a	13a	14a	15a	16a
Output No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Valve No.	17a	18a	19a	20a	21a	22a	23a	24a	25a	26a	27a	28a	29a	30a	31a	32a

<Double wiring>

Output No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Valve No.	1a	(Unused)	2a	(Unused)	3a	(Unused)	4a	(Unused)	5a	(Unused)	6a	(Unused)	7a	(Unused)	8a	(Unused)
Output No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Valve No.	9a	(Unused)	10a	(Unused)	11a	(Unused)	12a	(Unused)	13a	(Unused)	14a	(Unused)	15a	(Unused)	16a	(Unused)

Double solenoid valves only

<Standard wiring>

Output No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Valve No.	1a	1b	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8a	8b
Output No.	16	14	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Valve No.	9a	9b	10a	10b	11a	11b	12a	12b	13a	13b	14a	14b	15a	15b	16a	16b

Single and double solenoid valves mixed

<Standard wiring>

Output No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Valve No.	1a	2a	3a	3b	4a	4b	5a	6a	7a	7b	8a	9a	10a	10b	11a	11b
Output No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Valve No.	12a	13a	13b	14a	14b	15a	15b	16a	17a	18a	18b	19a	19b	20a	20b	21a

<Double wiring>

Output No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Valve No.	1a	(Unused)	2a	(Unused)	3a	3b	4a	4b	5a	(Unused)	6a	(Unused)	7a	7b	8a	(Unused)
Output No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Valve No.	9a	(Unused)	10a	10b	11a	11b	12a	(Unused)	13a	13b	14a	14b	15a	15b	16a	(Unused)

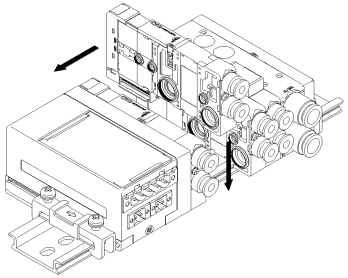
Wiring between serial transmission unit block and valve block

⚠ CAUTION

■ When increasing the number of manifold, do not exceed the maximum link number. Increasing the number of manifold, exceeding the range of specification, may cause unintentional operation of valve block causing malfunctioning of the device.

■ Valve block, supply block and exhaust bock are provided with internal wiring connectors which perform wiring connections upon disassembling/assembling of block manifold, requiring no special wiring. The figure below shows wiring diagram.

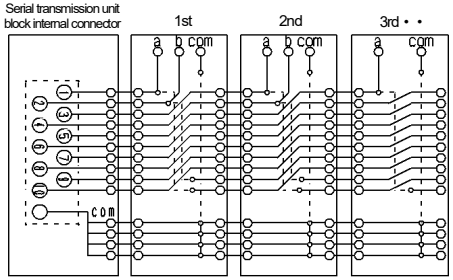
■ Pin numbers of internal connector on the serial transmission unit block and wired valves are governed by regular principles. When connecting valve and control device, refer to "wiring system T7*" described on the left and the table below "Output No. and internal connector pin No.". This principle must be taken in account when increasing/decreasing the number of valve blocks.



Wiring diagram

The figure right shows 4E0 wiring diagram which does not correspond to actual specification.

The diagram shows an example where:
1st and 2nd link = double solenoid
3rd link = single solenoid



Serial transmission unit block output numbers and corresponding internal connector pin numbers

Output No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	-	-
Connector pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	+COM	+COM
Output No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	-	-
Connector pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	+COM	+COM

● CKD Corporation
□ 2-250 ouji Komaki, Aichi 485-8551, Japan
□ PHONE +81-(0)568-74-1338

For dealer information refer to our catalog or visit our website.
http://www.ckd.co.jp/