

# 3, 4, 5 port pilot operated valve **4K** Series

## Overview

The 4KA and 4KB Series are the compact 3, 4, 5 port valve series available in valve widths including 15, 18, 23, and 29 mm. This series is suitable for driving 40 to 160 diameter cylinders.

## Features

### High reliability

The newly designed soft spool increases reliability.

The manifold has a standard filter on the P port.

### Long life

Newly developed wear-resistant packing extends life.

### Responsiveness

Responsiveness during initial operation is stabilized by newly developed special packing.

### Compact

The compact design downsizes the entire device.


### Ample wire connections

Connections such as wire lead, terminal box, and connectors are available. Operation indicator light and surge suppressors can also be used.

### High-density integration

Manifolds can be freely and flexibly combined, making it easy to increase and decrease the number of stations.

4KA/B

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# Safety precautions

Always read this section before starting use.  
Refer to Intro 63 for precautions on general valve.

MN3E0  
MN4E0

4GA/B

M4GA/B

MN4GA/B

4GA/B  
(Master)

W4GA/B2

W4GB4

MN3S0  
MN4S0

4TB

4L2-4/  
LMFO

4SA/B0

4SA/B1

4KA/B

4F

PV5G/  
CMF

PV5/  
CMF

3MA/B0

3PA/B

P/M/B

NP/NAP/  
NVP

4F\*0E

HMV  
HSV

2QV  
3QV

SKH

PCD/  
FS/FD

Ending

## 3, 4, 5 port pilot operated valve 4K Series

### Design & Selection

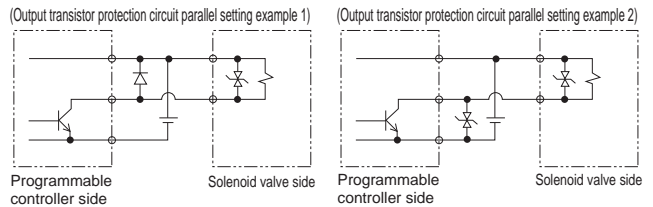
#### 1. Surge suppressor

##### CAUTION

- The surge suppressor enclosed with the solenoid valve is to protect the output contact for that solenoid valve's drive. There is no significant protection for other devices in the area, and the surge may cause damage or malfunctions. Surge generated by other devices could be absorbed and cause damage such as burning. Note the followings when selecting the type with built-in surge suppressor (wire connection symbols: L, L2, LS, C\*, D\*).
- (1) The surge suppressor limits solenoid valve surge voltage, which can reach several hundred volts, to a lower voltage level withstandable by the output contact. Depending on the output circuit used, this may be insufficient and could result in damage or malfunction. Check whether the surge suppressor can be used by the surge voltage limit of the solenoid valve in use, the output device's withstand pressure and circuit structure, and by the degree of return delay time. If necessary, provide other surge measures. Solenoid valves with surge suppressors suppress the reverse voltage surge generated during OFF operation to the levels below.

Rated voltage	Reverse voltage value when OFF
12 VDC	27 V
24 VDC	47 V

- (2) When using the NPN output unit, a surge voltage equivalent to the voltage above plus the power voltage surge could be applied. Provide contact protection circuit.



- (3) If another device or solenoid valve is connected in parallel to the solenoid valve, the inverse voltage surge generated when the valve is OFF would apply to those devices. Even when using the solenoid valve with surge suppressor for 24 VDC, the surge voltage may reach minus several ten V depending on the model. This inverse polarity voltage could damage or cause the other devices connected in parallel to malfunction. Avoid parallel connection of devices suspected of reversing polarity voltages, e.g., LED indicators. When driving several solenoid valves in parallel, the surge from other solenoid valves could enter the surge suppressor of one solenoid valve with a surge suppressor. Depending on the current value, that surge suppressor could burn. When driving several solenoid valves with surge suppressors in parallel, surge current could concentrate at the surge suppressor with the lowest limit voltage and cause similar burning. Even if the solenoid valve type is the same, the surge suppressor's limit voltage can be inconsistent, and in the worst case, could result in burning. Avoid parallel drive of a solenoid valve of plurality.
- (4) The surge suppressor incorporated in the solenoid valve often short-circuits if damaged by overvoltage or overcurrent from a source other than the solenoid valve. If the surge suppressor fails, if a large current flows when output is on, the output circuit or solenoid valve could be damaged or ignite. Do not keep power on in a faulty state. Provide an overcurrent protection circuit on the power or drive circuit or use a power supply with overcurrent protection so that a large current does not flow continuously.

### During Use & Maintenance

##### CAUTION

- Do not plug P/R port. Pilot pressure is not exhausted and valve does not work.
- Energizing for a long time could impair solenoid valve performance. Consult with CKD when using in a continuously energized application. Similar caution is required in the following use.
  - During intermittent energizing, energizing takes longer than non-energizing.
  - During intermittent energizing, one energizing session exceeds 30 min.
 Consider heat dissipation when installing. Consult with CKD when using in a continuously energized application.

- Life could be shortened when using dry air (atmospheric dew point -20°C or less) and AC voltage. Using DC voltage with dry air is recommended. Consult with CKD when using AC voltage.