SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/
COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/
MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd
Contr
Ending

Pneumatic components

Safety Precautions

Be sure to read this section before use.

Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: Small direct mounting cylinder   MDC2 Series

Design/selection

1. Common

⚠ CAUTION

■ When using MDC2 with reed switch, the cylinder cannot be mounted on a magnetic substance (iron plate, etc.).

■ For MDC2 with proximity switch, use the cylinder at ambient temperature of 40°C or less. Failure to do so could lead to switch detection malfunction.

2. Single acting   MDC2-X/Y

⚠ CAUTION

■ Do not leave the single acting cylinder pressurized. If it is left pressurized for long periods, the piston rod may not return due to spring load when the pressure is released.

3. Fine speed   MDC2-F

⚠ CAUTION

■ Use without lubrication.
  ● Applying lubrication may cause changes in characteristics.
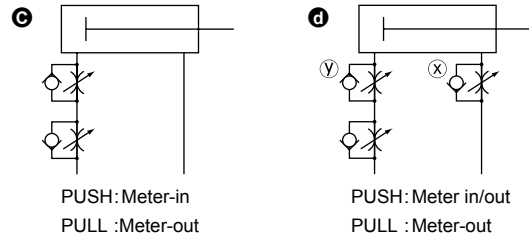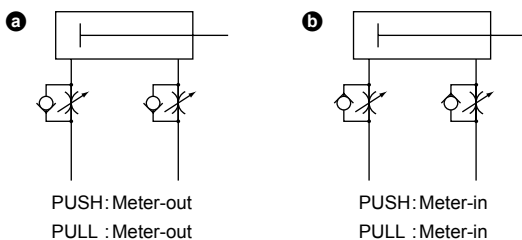
■ Assemble the speed controller near the cylinder.
  ● When installed far from the cylinder, the speed becomes unstable.
  ● Use the SC-M3/M5-F, SC3W, SCD-M3/M5-F Series speed controller.

■ In general, the speed is stabler at higher air pressure and lower load factor.
  ● Use at a 50% or less load factor.

■ Stable speed control is achieved with a meter-out circuit.
  ● When fine speed activation is performed with operating direction PUSH for the single rod cylinder, the popping out phenomenon occurs when operation starts if the load resistance is low. For countermeasures, use the ❶, ❷ or ❸ circuit. Note that circuit ❸ is the most stable.

ⓐ

ⓑ

PUSH：Meter-out
PULL ：Meter-out

PUSH：Meter-in
PULL ：Meter-in

ⓒ

ⓓ

PUSH：Meter-in
PULL ：Meter-out

PUSH：Meter in/out
PULL ：Meter-out

Speed adjustment method for PUSH operation of ❸ circuit:
  1. Set the speed with the speed controller x.
  2. Restrict the speed with the speed controller y until there is no popping out.
  3. Check the speed again.

(*1) When comparing ❶, ❷ and ❸, the ❸ circuit is the most stable.

(*2) For vertical mounting, combine the cylinder with a meter-out circuit, as it will fall under its own weight when a meter-in circuit is used.

W OK

W ✗ Falls under its own weight when lowering
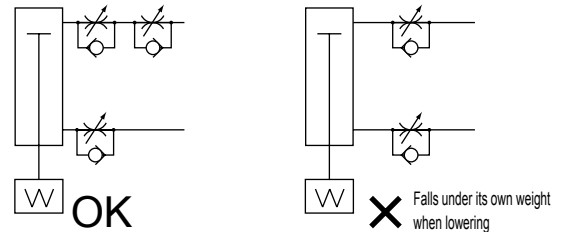
(*3) Use the circuit shown in the figure below for the serial connection of the speed controllers.

OK

✗ Speed control is unstable
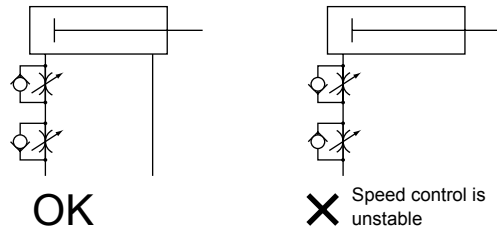
(Guidelines for pop-out generation)
Popping out occurs in the following cases.
· Thrust > Resistance

  * Resistance: Thrust caused by residual pressure on the exhaust side (in the fine speed, suction pressure = residual pressure) + { When using horizontally: frictional force caused by load / When using vertically: load self-weight }

■ Do not apply a lateral load to the cylinder.
  ● With a lateral load, operation will become unstable.

■ Avoid using this product where vibration is present.
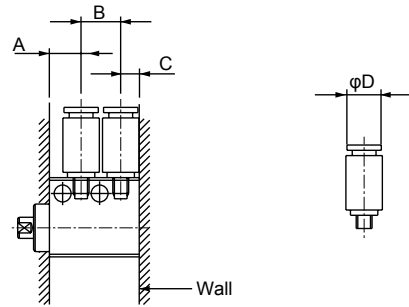 ● The product will be adversely affected by vibration and operation will become unstable.

CKD

Mounting, installation and adjustment

1. Common

⚠ CAUTION

■ As compatible piping fittings are limited, refer to the table below to select the fitting.

— Wall

Descriptions			Port position dimensions (mm)			With wall			Without wall		
Bore size (mm)	Port size	Stroke mm	A	B	C	Applicable fittings	Fitting O.D. φD	Inapplicable fittings	Applicable fittings	Fitting O.D. φD	Inapplicable fittings
φ4	M3	3	6.5	7	3.5	GWS3-M3-S FTS4-M3	φ7 or less	GWS4-M3-S SC3W-M3-3 SC3W-M3-4 SC3U-M3-3 SC3U-M3-4	GWS3-M3-S FTS4-M3	φ7 or less	GWS4-M3-S SC3W-M3-3 SC3W-M3-4 SC3U-M3-3 SC3U-M3-4
		6	6.5	10	3.5				GWS3-M3-S GWS4-M3-S FTS4-M3 SC3W-M3-* SC3U-M3-*	φ10 or less	
φ6	M3	4	6	7.5	3.5	GWS3-M3-S FTS4-M3	φ7 or less	GWS4-M3-S SC3W-M3-3 SC3W-M3-4 SC3U-M3-3 SC3U-M3-4	GWS3-M3-S SC3W-M3-* SC3U-M3-*	φ7.5 or less	GWS4-M3-S
		6	6	9.5	3.5				GWS3-M3-S GWS4-M3-S FTS4-M3 SC3W-M3-* SC3U-M3-*	φ9.5 or less	
		8	6	11.5	3.5				↑	φ11.5 or less	
φ8	M3	4	6	7.5	3.5	GWS3-M3-S FTS4-M3	φ7 or less	GWS4-M3-S SC3W-M3-3 SC3W-M3-4 SC3U-M3-3 SC3U-M3-4	GWS3-M3-S SC3W-M3-* SC3U-M3-*	φ7.5 or less	GWS4-M3-S
		6	6	9.5	3.5				GWS3-M3-S GWS4-M3-S FTS4-M3 SC3W-M3-* SC3U-M3-*	φ9.5 or less	
		8	6	11.5	3.5				↑	φ11.5 or less	
φ10	M5	4	7	10	5	GWS*-M5-S SC3W-M5-* SC3U-M5-* GWS4-M5-S FTS4-M5 FTS6-M5	φ10 or less	GWS*-M5 GWS6-M5-S	GWS*-M5-S SC3W-M5-* SC3U-M5-* GWS4-M5-S FTS4-M5 FTS6-M5	φ10 or less	GWS*-M5 GWS6-M5-S
		6	7	12	5				GWS*-M5-S SC3W-M5-* SC3U-M5-* GWS4-M5-S GWS6-M5-S GWS4-M5 FTS4-M5 FTS6-M5	φ12 or less	GWS6-M5
		10	7	16	5				GWS*-M5-S SC3W-M5-* SC3U-M5-* GWS4-M5-S GWS6-M5-S GWS4-M5 GWS6-M5 FTS4-M5 FTS6-M5	φ14 or less	

* Port dimension indicates dimensions for standard/without switch

2. Fine speed MDC2-F

⚠ CAUTION

■ Perform adjustment such as centering so that a lateral load is not applied to the cylinder.
 Adjust and install the sliding guide so that it is not twisted.
  ● When the load or the resistance fluctuates, operation becomes unstable.
  ● With a large difference between static friction and kinematic friction of the guide, operation becomes unstable.

| SCP*3 |
| CMK2 |
| CMA2 |
| SCM |
| SCG |
| SCA2 |
| SCS2 |
| CKV2 |
| CAV2/ COVP/N2 |
| SSD2 |
| SSG |
| SSD |
| CAT |
| MDC2 |
| MVC |
| SMG |
| MSD/ MSDG |
| FC* |
| STK |
| SRL3 |
| SRG3 |
| SRM3 |
| SRT3 |
| MRL2 |
| MRG2 |
| SM-25 |
| ShkAbs |
| FJ |
| FK |
| Spd Contr |
| Ending |

MDC2 Series

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVP/N2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

Use/maintenance

1. Common

⚠ CAUTION

■ Because this cylinder is a non-disassembly, do not apply excessive force to the rod metal or the cylinder body.

CKD