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: Clamp cylinder with position locking UCAC2 Series

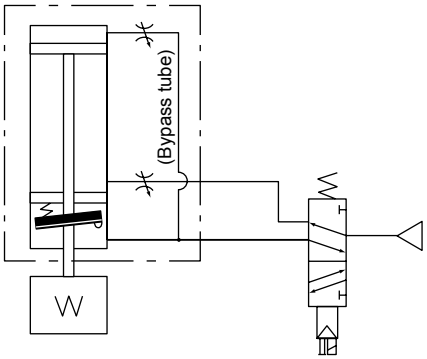
Design/selection

⚠ CAUTION

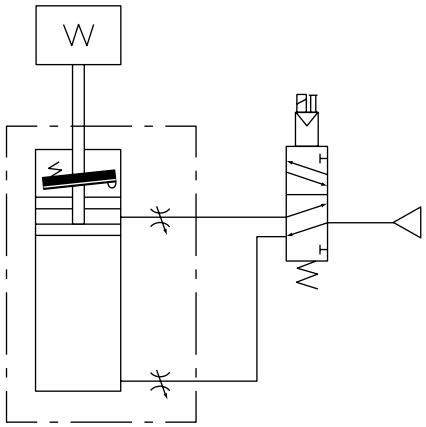
■ Basic circuit diagram

The built-in metering valve eliminates the need to install a speed controller for speed control. However, both the meter-in and meter-out states are metered, and both forward and backward speeds will change with only one needle adjusted. To control the forward and backward speeds individually, a speed controller must be installed.

● Forward locking F type



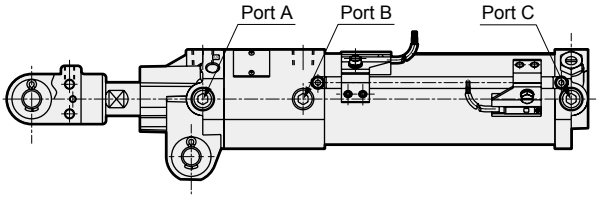
● Backward locking B type



Using the emergency stop will move the cylinder backward in a forward locking and forward in a backward locking, returning it to the original position.
(When there is no residual pressure, the cylinder stops at that point.)

■ The piping port position of UCAC2 can be changed in the same way as the CAC4 Series. Be sure not to use the incorrect pressure port when doing so.

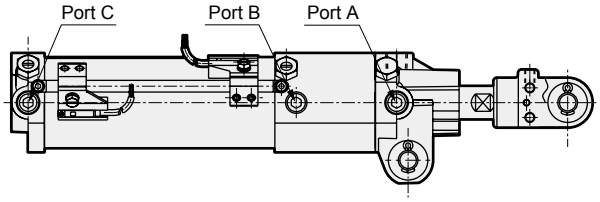
● When the port position is on the right side
(Lock direction F1 is on the right as standard)



Port / Lock direction	Port A	Port B	Port C
Forward locking F type *1	PUSH port	PULL port	Plug
Backward locking B type	Plug	PULL port	PUSH port

*1: As the F2 lock direction has a bypass tube, the port cannot be placed on the right side.

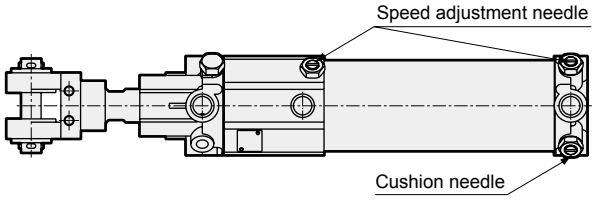
● When the port position is on the left side



Port / Lock direction	Port A	Port B	Port C
Forward locking F type *1	PUSH port	PULL port	Plug
Backward locking B type	Plug	PULL port	PUSH port

*1: As the F lock direction has a bypass tube, the port cannot be placed on the left side.

■ Do not mistake the speed adjustment needle for the cushion needle.



Mounting, installation and adjustment

⚠WARNING

■ Do not disassemble the unit, as doing so may be dangerous.

⚠CAUTION

● Flush the connecting pipes carefully before mounting to prevent dust and cutting chips from entering the cylinder.

■ Protect the piston rod sliding surface from scratches and dents.
It will cause damage to the packing, etc., and may lead to air leakage.

Use/maintenance

⚠WARNING

■ For safety purposes, prevent the load from falling under its own weight during maintenance.

⚠CAUTION

■ The purpose of the cushion is to absorb the piston's kinetic energy with air compressibility, preventing the piston and cover from colliding at the stroke end.
Therefore, the cushion itself does not reduce the piston speed at the stroke end.
The following table shows the kinetic energy that can be absorbed by the cushion. If the kinetic energy exceeds these values, or if bounding caused by the air compressibility is to be avoided, consider using a separate shock absorber.

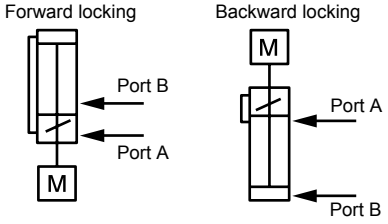
$$\text{Kinetic energy (J)} = \frac{1}{2} \times \text{load weight (kg)} \times [\text{speed (m/s)}]^2$$

Cushion characteristics table

Bore size (mm)	Effective cushion length (mm)	Allowable absorbed energy (J)	
		With cushion	Without cushion
ø50	13.5	6.54	0.14
ø63	13.5	11.63	0.21

■ Do not apply torque to the rod when brakes are applied because the locking force may decrease, creating a dangerous condition.
Also, use this product in mechanisms in which the rod does not rotate.

■ Make sure to supply pressure to port B, and before unlocking, check that load is not applied to the lock mechanism.
If pressure is supplied to port A when both ports A and B are exhausted and the piston is locked, the lock may not be released or the piston rod may pop out even if the lock is released. This can be extremely hazardous.



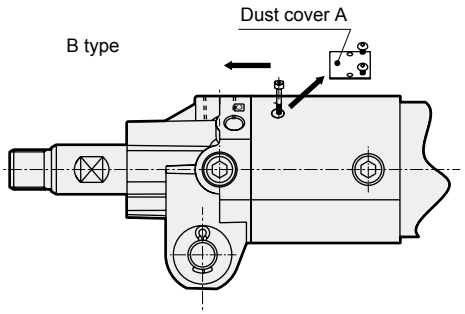
■ Keeping the cylinder with pressure applied to the lock mechanism may cause the lock to release.
Do not use 3-position closed center and 3-position P/A/B connection solenoid valves.

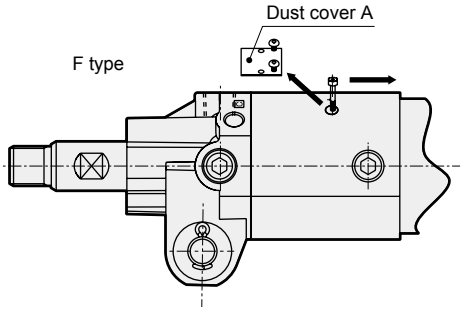
■ If back pressure is applied while locked, the lock may be released. Use a discrete solenoid valve, or an individual exhaust manifold.

■ Do not use with the by-pass tube disconnected, as lock response could be delayed.

■ Note that due to the structure, a 1 mm deviation may occur when stopped with the lock.

■ How to unlock manually
1. Remove the dust cover A.
2. Screw the hexagon socket bolt (length: 40 or more) fully into the screw hole M4 of the lock metal.
3. Push the hexagon socket bolt in the direction of the arrow to free the rod.



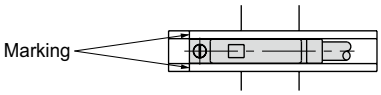


1. Common (With T type switch: band mounting)

⚠ CAUTION

■ When moving the switch position to the stroke length direction

- The 1-color display switch can be fine-tuned by ±3 mm from the default. If the adjusting range exceeds ±3 mm, or when fine-tuning the 2-color display switch, move the band position.
- Loosen the switch fixing screw, shift the switch along the rail, then tighten at the specified position.
  When using T2, T3, T0, or T5, use a flathead screwdriver (clockwork screwdriver, precision screwdriver, etc.) with a grip diameter of 5 to 6 mm, a 2.4 mm or smaller tip, and a thickness of 0.3 mm or less to tighten the screws with a tightening torque of 0.1 to 0.2 N·m.
  When using T*C, T2J, T2Y, or T3Y, tighten the screw with a tightening torque of 0.5 to 0.7 N·m.
- The switch bracket rail has a marking 4 mm from the rail end. Use as a guide to the mounting position when replacing the switch.
  Switch rail markings are set to the switch max. sensitivity position, which is the switch mounting position in the dimensions.
  The max. sensitivity position will change when the switch is changed or when the band is moved. Adjust the position accordingly in this case.



■ When moving the switch position to the circumferential direction

- Loosen the band fixing screw, shift the switch rail in the circumferential direction, then tighten at the specified position.
  The tightening torque of band fixing screw is 0.6 to 0.8 N·m.

■ Shifting the band position

- Loosen the band fixing screw, shift the switch rail and band along the cylinder tube, and tighten at the specified position.
  The tightening torque of band fixing screw is 0.6 to 0.8 N·m.